THE LANCET.

A Journal of British and Foreign Medicine, Surgery, Obstetrics, Physiology, Chemistry, Pharmacology, Public Health, and News.

TELEGRAPHIC ADDRESS—LANCET, LONDON

[ONE HUNDRED AND SEVENTY-SIX PAGES.]

TELEPHONE NUMBER—5358 GERRARD

No. XXI. of VOL. II., 1908. No. 4147. Vol. CLXXV. LONDON, SATURDAY, NOVEMBER 21, 1908. PRICE 7d.; POST FREE, 7½d. [Pp. 120+56.

ROYAL SOCIETY OF MEDICINE.

SECTIONS: Clinical, Dermatological, Electro-therapeutical, Epidemiological, Laryngological, Medical, Neurological, Obstetrical and Gynæcological, Odontological, Otological, Pathological, Surgical, Therapeutical and Pharmacological, Anæsthetics, Disease in Children. DIARY of MEETINGS on page 1574.

UTERINE FIBROIDS.

By BEDFORD FENWICK, M.D., Gynæcologist to The Hospital for Women, Soho-square; formerly Senior Assistant Physician to the City of London Hospital for Diseases of the Chest.

"Dr. Fenwick's results are remarkably good."—THE LANCET.

Price 3s. 6d. post free.

By the same Author.

COMMON COMPLAINTS of WOMEN.

"Eminently practical."—THE MEDICAL TIMES.

3s. 6d. post free.

E. H. Blakeley, 11, Adam-street, Strand, London, W.C.

NOW READY.

SQUIRE'S COMPANION

(EIGHTEENTH EDITION)

1864—1908.

J. & A. Churchill, 7, Great Marlborough-street, London, W.

For further particulars see page 7.

New Work. 240 pp. Illustrated. 5s. net.

SPINAL CURVATURES: The General Principles of their Treatment.

With a Critical Analysis of the Gymnastic Theories.

"*We must not fail to recognise, and to record our recognition of, the care and fulness with which the author has treated his subject. The book will be of value as containing the best exposition of this method of treatment.*"—THE LANCET.

"*We attach importance to a supporting apparatus in the treatment of scoliosis. We do think that if the spine is supported in this way during growth it may grow straight, just as a bent tibia may.*"—BRISTOL MEDICO-CHIRURGICAL JOURNAL.

By HEATHER BIGG, F.R.C.S. Ed.

J. & A. Churchill, London.

DAVIDSON'S BULLETIN of NOVELTIES.

Issued periodically. October Number now ready. Chief items: Spectacles for the Partially Blind and Special Portable Set Electrical Appliances for Examination of Eye, Ear, Nose, Throat; Transillumination of Sclera, Antrum and Sinuses; Cautery; £8 8s.

Post free from

F. Davidson & Co., 29, Great Portland-street, London, W.

THE CURE OF THE MORPHIA HABIT WITHOUT SUFFERING.

By OSCAR JENNINGS, M.D. Paris, M.R.C.S. Eng.

"Contains the pith of a wide experience; full of practical hints; very pleasantly written. A work we can heartily recommend to the study of those who desire to relieve their patients of the thraldom of this terrible habit."—THE LANCET.

London: Baillière, Tindall & Cox. Second Edition, price 3s. 6d. net.

W. CARNEGIE BROWN, M.D., M.R.C.P.

SPRUE and its TREATMENT. Fcap. 4to, 270 pp., with 2 Plates. Cloth, gilt lettered, price 6s. net.

London: J. Bale, Sons, & Danielsson, Ltd., Great Titchfield-street.

Pp. xii.+168, with 91 Illustrations. Price 6s. net.

HANDBOOK of INTESTINAL SURGERY.

By L. A. BIDWELL, F.R.C.S. Eng., Surgeon, West London Hospital; Lecturer on Intestinal Surgery and Dean, Post-Graduate College.

London: Baillière, Tindall & Cox, 8, Henrietta-street, Covent Garden.

Pp. xiv. + 196. With 20 Illustrations. Price 5s. net.

ULCERATION OF THE CORNEA.

By ANGUS MACNAB, B.A., B.Sc., M.B., B.Ch., F.R.C.S., Chief Clinical Assistant, Royal London Ophthalmic Hospital.

London: Baillière, Tindall & Cox, 8, Henrietta-street, Covent Garden.

Fourth Edition.

LECTURES ON

NEURASTHENIA.

By THOMAS D. SAVILL, M.D. Lond.,

Physician to the Welbeck-street Nerve Hospital.

"The book is beautifully written, and has proved to us a vast source, not only of information, but of pleasurable reading."—CHARING CROSS HOSP. GAZ.

H. J. Glaisher, 57, Wigmore-street, W. 7s. 6d. net; 7s. 10d. by post.

SECOND EDITION, with Illustrations, royal 8vo, 10s. 6d.

TREATMENT of LATERAL CURVATURE of the SPINE. By BERNARD ROTH, F.R.C.S.

"In speaking of the first edition we expressed the hope that this book would do something to check the unscientific and often disastrous treatment of lateral curvature of the spine by spinal supports and prolonged rest, and this new edition is even better calculated to show the good results which may be obtained in lateral curvature by posture and exercise."—THE LANCET.

"There can be no doubt that good work has been done by the author by his strong advocacy of the more rational method of treating lateral curvature of the spine by exercises."—BRITISH MEDICAL JOURNAL.

London: H. K. Lewis, 136, Gower-street, W.C.

SAUNDERS' NEW BOOKS

BIER'S HYPEREMIC TREATMENT

BY WILLY MEYER, M.D., AND PROF. V. SCHMIEDEN.

THE STANDARD ENGLISH WORK ON THE SUBJECT.

See Saunders' Advertisement on Page 5.

Published To-day. Fifth Edition, 408 pp., price 2s. 6d. net.

HANDBOOK for ATTENDANTS on the INSANE. Issued by the authority of the Medico-Psychological Association. Entirely rewritten and rearranged with a number of new illustrations.—London: Baillière, Tindall & Cox.

Just Published. Pp. xii.+188. Price 5s. net.

THE NATIONAL PHYSIQUE. By A. STAYT DUTTON L.R.C.P. Lond., M.R.C.S. Eng.

London: Baillière, Tindall & Cox.

Now Ready Pp. viii.+344. Price 5s. net.

PHYSIOLOGICAL PRINCIPLES in TREATMENT. By W. LANGDON BROWN, M.A., M.D., Demonstrator o Physiology and Morbid Anatomy, St. Bartholomew's Hospital.

London: Baillière, Tindall & Cox, 8, Henrietta-street, Covent Garden.

THE FOOD FACTOR in DISEASE. Including the Pathology and Treatment of Bilious Attacks, the Paroxysmal Neuroses (Migraine, Asthma, Angina Pectoris, &c.), Gout, High Blood-pressure, &c. By FRANCIS HARE, M.D., Consulting Physician, Brisbane Hospital. For abstract see THE LANCET review—Feb. 17th, 1906, pp. 453 to 455.—Longmans, Green & Co. In two volumes. Price 30s. net.

Now Ready. Demy 8vo. 324 pp. Illustrated. Price 7s. 6d. net.

THE MEDICAL DISEASES of EGYPT. Pt. I.

By F. M. SANDWITH, M.D., F.R.C.P.

London: Henry Kimpton, 13, Furnival-street, Holborn, E.C.

Pp. 622, with 281 Illustrations, price 10s. 6d. net.

SEWILL'S DENTAL SURGERY, including SPECIAL ANATOMY and PATHOLOGY.

Fourth Edition. Edited by

W. J. ENGLAND, L.D.S., & J. SEFTON SEWILL, L.R.C.P., M.R.C.S., L.D.S.

"A complete manual."—BRIT. MED. JOUR.

"Has the charm of lucidity."—THE LANCET.

London: Baillière, Tindall & Cox, 8, Henrietta-street, Covent Garden.

THERAPEUTICS of the CIRCULATION.

EIGHT LECTURES delivered in the Spring of 1905 in the Physiological Laboratory of the University of London.

By SIR LAUDER BRUNTON, BART.,

M.D., D.Sc., LL.D.(Edin.), LL.D.(Aberd.), F.R.C.P., F.R.S., Consulting Physician to St. Bartholomew's Hospital.

Published under the auspices of the University of London.

Demy 8vo. 7s. 6d. net.

John Murray, Albemarle Street, W.

Price 2s. 6d. net.

MOUTH-BREATHING and its RELATION to DISEASES of the THROAT, NOSE, EAR, and ACCESSORY CAVITIES.

By MAYO COLLIER, M.S.Lond., F.R.C.S.Eng., Senior Surgeon to the North-West London Hospital; late President of the British Laryngological, Rhinological, and Otological Association.

BY SAME AUTHOR. Price 2s. net.

CHRONIC PROGRESSIVE DEAFNESS: Its Causation and Treatment.

London: Baillière, Tindall & Cox, 8, Henrietta-street, Covent Garden.

THE LANCET is registered as a Newspaper. All rights reserved.

It is claimed for . . **VI-TONICA** that it is a brain food, a stomachic and tonic for the nerves of the highest order, and at the same time it is a first-rate pure beverage.

When ordering name this Journal.

THE NEWEST AND BEST TEMPERANCE BEVERAGE

VI-TONICA

NATURE'S RESTORER.

An Invigorating and Refreshing Beverage.

NON-ALCOHOLIC.

Equally pleasing for Old and Young in Winter or Summer.

Bottlers: **SLACK & COX, Ltd., Manchester.**

Re: BROMURAL

(α-Monobrom-isovalerianyl-urea.)

Though BROMURAL creates a quiet state of the nerves, whereby the necessary restful sleep is attained, it cannot be given in lieu of the direct and prompt-acting hypnotics, but simply as a harmless

POWERFUL NERVE SEDATIVE

As such its action supersedes many times that of the Bromides without showing the slightest injurious by- or after-effects. It is especially efficacious in all forms of nervous excitability and insomnia associated with mental overwork, hysteria, nervous dyspepsia. It is quickly eliminated from the body, and 5-10 grains might therefore be given several times during the day.

KNOLL & CO., 8, HARP LANE, LONDON, E.C.

By Appointment **to H.M. the King.**

The Non-toxic Cyllin Bactericide.

(Medical)

Has a guaranteed Rideal-Walker Co-efficient of 20.0. It is therefore equal to Perchloride of Mercury as a bactericide. *(Vide "The Medical Press," Feb. 14, 1906.)*

N.B.—It has been found necessary to substitute the term "Rideal-Walker Co-efficient" for that originally introduced by the authors, viz., "Carbolic Acid Co-efficient," owing to the abuse of the latter on the part of unscrupulous manufacturers and vendors.—*Vide British Medical Journal*, April 6th, 1907.

Preparations of Cyllin:—

Cyllin Capsules (palatinoids)—Recommended for Gastric or Intestinal Antisepsis.

Cyllin Syrup—For use where indicated in Infantile Diarrhœa.

Cyllin Inhalant—For use with Cyllin Inhalator in suppurative conditions of the bronchial passages, &c.

Lano-Cyllin—For use in Eczema, Pruritus, and other Inflammatory conditions of the Skin.

Cyllin Pastilles—Antiseptic Throat Lozenges; invaluable for purposes of mouth hygiene.

Cyllin Obstetrical Lubricant, Soaps, Lint, Dusting Powder, etc.

See Pamphlet entitled "Standard Chemical Disinfectants." Copies, together with working Samples, sent gratis and postage paid on applying to

Jeyes' Sanitary Compounds Co., Ltd., 64, Cannon St., London, E.C.

Three Lectures
ON THE
PATHOLOGY AND TREATMENT OF DIABETES MELLITUS, VIEWED BY THE LIGHT OF PRESENT-DAY KNOWLEDGE.

Delivered before the Royal College of Physicians of London

BY F. W. PAVY, M.D. LOND., LL.D. GLASG., F.R.S.,
CONSULTING PHYSICIAN TO GUY'S HOSPITAL; HONORARY PHYSICIAN TO KING EDWARD VII. HOSPITAL.

LECTURE I.

Delivered on Nov. 17th.

MR. PRESIDENT, COLLEAGUES, AND GENTLEMEN,—A faulty metabolism of carbohydrate stands at the foundation of the elimination of sugar that occurs in connexion with diabetes. When carbohydrate food is properly metabolised, it is placed in a position to be applied to utilisation and becomes lost sight of in the system. Not so in diabetes. Here the carbohydrate food fails to pass out of the condition of carbohydrate and filters off from the body with the urine in the form of sugar. To obtain a knowledge of where the fault lies, and what it consists of, it is requisite that we should have a knowledge of what transpires in connexion with the normal disposal of carbohydrate. This matter falls in the domain of physiology, and to physiology we have therefore in the first instance to look, for the groundwork to proceed upon. Such is the position in which physiology stands in relation to the subject to be dealt with, and unless we are here led in a right way, we cannot expect to be placed upon right ground for dealing with the problem before us.

By observation and methodically arranged experimental work, we obtain a knowledge of facts, and by the application of our reasoning power to these facts, we deduce from them governing laws or principles of action. As an outcome of the completion of this

INDUCTIVE METHOD

of procedure, the recognised facts no longer remain as isolated items of consideration, but fall into a correlated series, mutually linked together and fitting in with and supporting the deduction that has been formulated.

With the discovery of a law of action, an insight is given which constitutes a source of power by enabling us, through the agency of a designed modification of the conditions, to bring about a desired result. For instance, whilst nothing was known in the case of fevers, and such-like diseases, about the connecting microbe link standing at their foundation, we could only deal with them in an empirical way, and remained powerless to exert any intrinsic control over them. As soon, however, as their dependence upon the presence of a bacterial organism was discovered, a basis was supplied for a systematic extension of knowledge, which, spreading out in various directions, has vastly increased our power in the exercise of our medical art.

Diabetes constitutes the result of an erroneous procedure connected with the application of carbohydrate to the purposes of life. It falls within the province of physiology to reveal to us the nature of the procedure normally taking place, and necessarily we must possess this knowledge before we can stand in a position to comprehend the nature of the error that is productive of the disease. The art of medicine, therefore, which is concerned in rectifying the effects of the error, appeals to physiology for a rational basis upon which to work, and for the attainment of working success, everything hinges upon the soundness or otherwise of the teaching supplied.

At first the disease was only known through the bodily symptoms produced, and it remained, till what may be spoken of as a not far remote date, for sugar to be recognised as an eliminated principle in the urine. Without any guiding conception as to the nature of the disease, it afterwards became empirically found out that

FOOD CONSTITUTED AN INFLUENCING FACTOR

in connexion with treatment. In 1848 our countryman, Dr. Prout, said "the first and chief point to be attended to in the treatment of diabetes is diet." Bouchardat of Paris in 1841 introduced gluten bread and gave cases to show the beneficial effect of its employment in the place of ordinary bread. At this epoch, a great move was made by the announcement in 1848 of Bernard's glycogenic doctrine, which formed the starting point for the active and widespread prosecution of the varied researches which have brought us to the position in which we now stand.

Without the knowledge of why or wherefore, experience, as I have said, had begun to suggest that dieting attended with a restriction of carbohydrate food, produced a beneficial effect as a measure of treatment in diabetes. To this the glycogenic doctrine gave no support, seeing that it implied the passage of the food carbohydrate through the circulation to the tissues in the form of sugar and the production of sugar by the liver when carbohydrate was not supplied from without. Thus it was considered to be an essential condition of life that sugar as a force-producing agent should be constantly flowing through the circulation for the purpose of utilisation by the tissues, and the mode of experimenting then adopted, and relied upon, sustained this view. I need not here enter into the consideration of the fallacious character of the evidence upon which the glycogenic doctrine was built. I have shown in my recent work on "Carbohydrate Metabolism and Diabetes" that the propositions originally formulated can be indisputably asserted to be no longer tenable.

It has been said that, at the time of the promulgation of the glycogenic doctrine, experience had commenced to point to the benefit derivable from the restriction of carbohydrate food in the treatment of diabetes. Reasoning based upon this doctrine now stepped in to exert a neutralising effect. See, for instance, the line of argument adopted by M. Rigodin and quoted in the first edition of my work "On the Nature and Treatment of Diabetes." Because the experimental work of the period had shown, as it was thought, that the presence of sugar in the economy was indispensable to life, M. Rigodin considered it rational to allow a diet in which sugar-forming substances entered largely upon the ground that patients suffering from the disease were losing large quantities of sugar.

The same kind of mischievous idea, as it may be truly styled, is found to have place in certain quarters even at the present time—viz., amongst those who take falsely grounded physiological views as their standpoint instead of the teaching derived from the facts revealed by the actual effect of food on persons suffering from the disease.

In support of this assertion let me refer to the recently published work

OF PROFESSOR VON NOORDEN

on diabetes mellitus. At page 81 of the English translation, by Dr. Boardman Reed, 1906, the following words are to be found:—"Secondary over-production of sugar, on the other hand, plays an important part in diabetes. The cells (of the body) are everlastingly hungry for sugar, although they are immersed in a medium which contains an abnormally large amount of it. They cannot avail themselves of this sugar for reasons that have been already discussed. Consequently they are continually signalling for the mobilisation of fresh quantities. Where the carbohydrates of the food and the stored-up glycogen can no longer supply the demand, as is the case in all severe forms of diabetes, then proteid, and, as a last resource, fat are called upon to yield sugar. Thus groups of atoms are claimed for this purpose which are usually of service for other purposes. This process may be designated a secondary over-production of sugar."

Here, verily, is an illustration of the kind of dilemma that the glycogenic doctrine may give rise to. It is assumed under it that sugar in a free form has to be constantly flowing into the system to meet a demand existing for it. It is further assumed that, accompanying this flow, there is a concordant removal of the sugar as it is passing through the systemic capillaries, and that diabetes is the result of an error at this point, leading to a non-consumption of the sugar. Notwithstanding, in the state of things portrayed, the system is over-burdened with sugar and gravely disordered from its presence, it is paradoxically contended that more is wanted, and that the want should be met by the supply of carbohydrate from without, and if not met in this way, that protein and fat are called upon to yield it.

At present, I will not pursue this matter further, but will leave it till other questions have been considered, and a more

fitting position has been reached for speaking of the manner in which the application of carbohydrate to the purposes of life takes place.

For the proper comprehension of the nature of diabetes, it is necessary, as I have previously said, to have a right comprehension of the manner in which carbohydrate becomes physiologically disposed of within the system. Unless we stand upon sound ground here, we cannot rationally cope, in the practice of medicine, with the erroneous state existing in diabetes.

All are agreed that one destination of carbohydrate is in the production of fat. This, however, does not fall within the subject matter before us and therefore does not call for consideration to be here given to it. The point to be dealt with is the mechanism associated with the passage of carbohydrate from its seat of absorption in the walls of the alimentary canal to that of utilisation in the tissues.

Local absorption by the walls of the alimentary canal and utilisation in the tissues obviously imply that

THE CIRCULATORY SYSTEM HAS TO BE TRAVERSED.

In what way does this occur? The character of the respiratory quotient suffices to show that carbohydrate is used up as such in the tissues to which it must, therefore, of necessity be transported from the seat of absorption. It next follows that, in the mode of transport that takes place, there must be nothing to stand in conflict with the maintenance of what is observed, in respect to other conditions, to constitute the normal state. The point plainly put is,—Does the carbohydrate pass through the circulation in the form of free sugar, or does it, on absorption, become immediately placed in combination with other matter, and, in this locked-up state, become transported to the seat of utilisation? Let us examine the question that has been here put forward and see how the two propositions stand in the presence of the evidence that is respectively adducible in connexion with them.

First, let attention be given to the view that the carbohydrate of our food is conveyed in the form of free sugar through the circulation to the tissues. This view is comprised in the glycogenic doctrine, which also includes the production of sugar by the liver for furnishing a supply of sugar to the blood when the supply of carbohydrate from the food is in default. When the doctrine in question was first propounded, the liver was regarded, unlike the other organs of the body, as being loaded with sugar, and the blood issuing from it as containing sugar to a conspicuous extent larger in amount than was to be met with elsewhere. In addition to this, the blood contained in the systemic veins was represented as containing notably less sugar than was present in the blood of the arterial system—a fallacious assumption upon which was based a coincident destruction of sugar during the transit of the blood through the systemic capillaries.

All this is now put on one side, and even the French school no longer contends for that which was in former times confidingly accepted. Notwithstanding, however, that the experimental ground has so vastly changed, a lingering disposition exists to retain the idea that carbohydrate follows the course assumed under the glycogenic doctrine, and passes in the form of free sugar through the circulatory system from the seat of absorption to that of utilisation in the tissues, such passage of free sugar, either from the food or the liver, being regarded as a necessary condition of life.

Now the passage of sugar to the tissues means associated passage to the kidney, and this means proportionate outflow with the urine. In proportion as sugar is present in the blood so it may be confidently said is it present in the urine. Impermeability of the kidney to sugar used to be spoken of. It is a pure fiction, invented to escape from the difficulty arising from not finding sugar in the urine as an outcome of the imaginary flow of sugar into the circulation from the food and the liver. Up to a certain point, sugar, it was said, might be present in the circulation without showing itself in the urine, whilst when present beyond the particular point, an escape occurred and thus accounted for the state existing in diabetes.

Nothing could be more devoid of substantiality than such a proposition. However unwilling persons have been to admit that

NORMAL URINE CONTAINS SUGAR,

the fact of its presence must now, after upwards of 50 years of hard contention, be looked upon as fully established. The negative reaction given with Fehling's solution has constituted the source of the fallacious impression, but it has now been made clear that principles are present in the urine which have the effect of interfering to a certain extent with copper sub-oxide precipitation and thus concealing limited amounts of sugar. All this is now fully recognised, and sugar has been incontestably shown by other means to be present in normal urine.

The nature, indeed, of things is such that, in proportion as sugar is present in the blood, so it may be looked for to be present in the urine. Sugar belongs to the class of small molecular bodies, and we know that these, whether of a drug, saline, or other nature, flow off in association with the water of the urine from the blood circulating through the kidney. It is inconceivable that sugar could exist in the blood without passing off with the water of the urine; and experience shows, in cases of glycosuria, that the kidney is exceedingly sensitive to sugar, the urine being instantaneously influenced by any alteration of the amount of sugar in the blood.

In a paper on the effect of the intravenous injection of sugar on the urine, contained in Vol. XXIV., 1899, of the *Journal of Physiology*, I have given a number of prefatory observations on the condition of healthy urine in relation to sugar, and it is seen that much variation in the amount present exists. In some, the amount was considerably beyond that which, under preconceived notions, would be considered credible. Doubt, however, upon the point of validity, or about the figures being in the main part due to carbohydrate is removed by determinations having in each case been made before and after hydrolysis, and by the results that were thence obtained. With the other cupric oxide reducing principles in the urine, no increase of reducing power is by the hydrolysing process brought about, and therefore all the rise that took place, and in some instances it was considerable, must have been attributable to the presence of carbohydrate.

The amount of sugar ordinarily present in the blood stands at about 1 per 1000, and as the urinary water flows off, it is accompanied with a relative proportion of the sugar and other small molecular bodies present in the blood. According to the state of blood plasma, so, in this respect, may be expected to be the state of the urinary flow from it taking place through the tuft belonging to the Malpighian body. The larger

THE AMOUNT OF SUGAR IN THE BLOOD,

the larger will be the amount flowing off with the urine. With 4 grammes per kilogramme of dextrose intravenously injected, 47 per 1000 of sugar was found, in one of the experiments mentioned in the paper above referred to, in the urine collected within less than one and a half minutes from the commencement of the injection. The sugar literally runs off through the kidney like running through a filter.

There is good ground for inferring that the same line of action occurs with small quantities as with large, and that the urine coming, for instance, other circumstances being equal, from blood containing 1·5 per 1000 of sugar will contain proportionately more sugar than that coming from blood containing 1 per 1000. The fluctuation of sugar within certain limits in normal blood will thus account for the fluctuation that is observable in normal urine.

Activity of kidney will, of course, constitute an influencing factor. If the circumstances should be such as to lead to a low output of urine, the output of sugar will be low in proportion. If urinary water does not escape, there cannot be an outflow of sugar.

The percentage relation of sugar in the urine will also be influenced by the degree of concentration the output from the Malpighian tuft attains in transit through the uriniferous tubules. Hence degree of concentration, which is denoted by the specific gravity, constitutes an item that demands consideration. Indeed, through concentration, the sugar belonging to healthy urine may be relatively raised sufficiently to give rise to the production of a perceptible reduction with Fehling's solution, and it is known that medical practitioners have to be upon their guard not to interpret it in a wrong way and put it down as an indication of disease.

The point that I desire should be clearly understood is that the urine, alike for small quantities and for large, affords an indication of the state of the blood with reference to sugar, and that if, from any circumstance, there is an entry of free

sugar into the circulation, it becomes at once proportionately apparent through the medium of the urine.

In the healthy state, the carbohydrate taken into the stomach does not reveal itself either in the blood or in the urine. There may be—say 200 or 300, or there may be 600 or 700 grammes taken, and the condition as regards both blood and urine remains unaltered, although as small a quantity as 1–4000th of the weight of the animal intravenously injected, in a pronounced manner affects them.

In diabetes, on the other hand, the carbohydrate reaching the stomach is followed with the same result as on being intravenously injected. This constitutes

THE ESSENTIAL DIFFERENCE BETWEEN HEALTH AND DIABETES.

In the latter, the carbohydrate taken as food shows itself in the blood and urine, just as it does when introduced in a direct manner into the circulation.

Cases of diabetes present themselves in which a certain amount of carbohydrate can be ingested without producing any discernible effect. Taken within the specific amount, it follows the course that it does in health and becomes subsequently lost to view. Taken, however, beyond the special amount, the result observed is the production of glycosuria corresponding to the extent to which the carbohydrate has surpassed the extreme amount from which no glycosuria follows. Up to a sharply defined point, the carbohydrate taken in these cases behaves as it does in the healthy subject, and fails to be subsequently recognisable, whilst that which is taken in excess of the defined point flows off in the form of sugar with the urine just as it does in a bad case of diabetes, and just as it would do if introduced by injection in a direct manner into the circulation.

Here, then, carbohydrate within a certain limit comports itself as it does under normal conditions, and beyond the limit, takes the course that is followed in diabetes. An intervening line exists between the normal and the abnormal states, and it is interesting and instructive to give attention to the facts observable in connexion with the transition from the one to the other. To watch the condition closely, the circumstances should be such as to permit of the transition point being discernible. Cases vary much as to where the boundary line denoting

THE TOLERATION POINT OF CARBOHYDRATE

lies. The tolerating power may be little, or it may be considerable. In either case, the result is the same on overstepping the boundary line existing, and in the phenomenon, an explanation is seen of the *modus operandi* of the diet testing resorted to by the physician for the supply of diagnostic information in connexion with diabetes. For the sake of illustration, I will cite the following two examples, which show how quickly the change is wrought, and how marked is the effect that may be produced by a limited amount of carbohydrate.

The subject of a mild form of glycosuria—that is, a person who could partake to a fair extent of carbohydrate without passing sugar, partook at breakfast, which was finished at 10 A.M., of fish, some toast, a tablespoonful of raspberry jam, and a cup of tea with one piece of sugar in it. The time of his visit to me was 10.15 A.M. At 10.20, he passed some urine, which gave no reaction with Fehling's solution. Thinking, however, that sugar would be likely to show itself, I purposely prolonged the consultation and obtained urine again at 10.40. This was found to contain 32·8 per 1000 of sugar. It was, probably, to the sugar taken, and not the starchy matter, that the high figures were due, sugar being ready for immediate absorption whilst starch has to undergo a preparatory conversion into sugar. With reference to the figures, it has also to be taken into account that urine having been passed at 10.20, that which was obtained at 10 40 represented secretion unmixed with urine secreted before the food was taken. The urine of 10.20 would partly consist of this latter, and probably if it had not been present to dilute the other, a certain amount of show of reaction would have been obtained.

In the other case, the patient, 53 years of age at the present time, has been the subject of diabetes for seven years. During the last four years, full restriction from carbohydrate food has been necessary to keep the urine free from sugar. The patient resides in Ireland, and for business purposes comes to London about twice a year, upon which occasions it is usual for him to fall under my notice. I observe from my notes that on Sept. 27th, 1904, night and morning specimens were brought for examination and were found to be free from sugar. Curiosity had led the patient to take a little toast at breakfast to see if it would affect the urine, and I find it noted that urine passed a short time afterwards gave a slight reaction with Fehling's solution.

Having started with the trial of the effect of toast in the manner mentioned, he continued to carry it on at his subsequent visits, and I will give the precise results that have been observed. April 11th, 1905, no sugar was found in the night and morning specimen of urine brought for examination, whilst two hours after breakfast, at which a single piece of toast was taken, the urine contained 10·9 per 1000 of sugar. Oct. 9th, 1906, the night and morning specimens brought gave no reaction of sugar. Breakfast had been taken at eight, and included the test piece of toast. Some urine was passed at 8.30 and 9.30 and was brought mixed together. It gave a trace of sugar reaction. Urine was again passed at 10.30 during the visit, and this was found to contain 19·2 per 1000 of sugar. March 13th, 1907, the night and morning specimens gave no reaction of sugar. Breakfast with the toast as before was taken at 9.15. The urine collected at 10.10 contained a trace of sugar, and that passed at 11, 10·9 per 1000. Oct. 8th, 1907, the patient breakfasted in a like manner to previously at 8.15. The night and morning specimens were free from sugar. Urine collected at 9.15 contained 7·8 per 1000, and that passed at 10.45, 12·5 per 1000.

This case exemplifies the remarkable steadiness associated with the elimination of sugar in diabetes. Here is a patient who, during a period of observation extending over three years, was found to pass no sugar whilst on the properly restricted diabetic diet, and almost immediately after taking starchy food in the limited quantity named, passed urine containing a decided amount of sugar. The facts related stand in strict accord with common experience in such cases. There is a sharp line limiting the extent to which carbohydrate can be taken without affecting the urine, and it is within the bounds of possibility for the limiting line to show no variation not only for weeks and months, but even for several years. There is much diversity in different cases with respect to where the line stands, but no matter what may be its position, as long as the carbohydrate taken falls within the particular boundary existing, the urine remains unchanged, whilst if the boundary is overstepped by ever so little, the urine affords an indication of the fact.

In the instance of the particular case upon which these remarks are founded,

THE BOUNDARY LINE

comprises the carbohydrate present in the diabetic diet employed by the patient, for it must be taken as understood that it is impossible absolutely to exclude all carbohydrate matter, however rigidly framed a diet may be. The amount of toast that sufficed to produce the results that have been narrated may, from the statement made to me by the patient, be computed at about 15 grammes, or a little over half an ounce. I find that ordinarily made toast contains about 28 per cent. of water, and making deduction for the water, the 15 grammes will contain 10·8 of dry solid matter, which, reckoned to contain 82 per cent. of starch, gives 8·8 grammes as the amount of carbohydrate productive of the effects upon the urine described.

Interposed between the seat of elimination of sugar with the urine and the seat of absorption of sugar from the alimentary canal, we have the contents of the circulatory system. All are agreed upon the point that, in the glycosuria under consideration, the sugar escaping with the urine is derived from

SUGAR PRE-EXISTING IN THE BLOOD.

What is meant then by the appearance of sugar in the urine is that it was previously present in the blood as a result of the carbohydrate food taken, and, reciprocally, it may be said that the presence of sugar in the blood leads to its proportionate presence in the urine. That the two go together is shown by the effect of the direct experimental introduction of sugar into the circulatory system, and confirmed by rational deduction from the molecular-sized condition of sugar and water viewed in relation to the eliminative process. Unquestionably sugar does not stand apart from other small molecular bodies in escaping with the urine as a

result of its presence in the blood. As a matter of fact, observation shows that the water does not pass off and leave the sugar behind.

Plainly looking at the phenomena in these cases of alimentary glycosuria, what do we find? That no altered condition of the urine is induced by the ingestion of carbohydrate within a certain limit, but that when this limit is reached and surpassed, sugar shows itself in the urine in proportion to the extent to which the overstepping has taken place. If this applies to the urine, it must, upon the strength of what has been said, equally apply to the blood, and this brings us to the conclusion that up to a certain point, carbohydrate can be taken without adding to the amount of sugar present in the blood, whilst if taken beyond the specific point, the amount of sugar in the blood becomes augmented in like manner to that observable in the case of the urine.

Obviously, there must be a different issue connected with the carbohydrate which fails, as in the healthy state, to show itself, and that which, in consequence of a larger quantity being taken, shows itself in an abnormal manner to us. By those who retain belief in the teachings of the glycogenic doctrine, it is held that the carbohydrate of our food passes through the circulatory system in the form of free sugar to become oxidised in the tissues, and the abnormal presence of sugar is ascribed to accumulation from faulty oxidation.

This plainly expressed represents the view that is nowadays adopted in explanation of the source of diabetes by partisans of the glycogenic theory. If such a view were correct, oxidation, which varies with functional activity, would always have to be standing on a par with the carbohydrate food-supply, a very variable item, to escape from accumulation. There is variability in consumption of carbohydrate by oxidation, and much variability in the supply of carbohydrate from without with the food, and yet the two are to stand in such balanced regulation as to provide the constant immunity from accumulation that is required to account for the steady maintenance of the urine in the state that is observed. Looking, indeed, at the very small amount of ingested carbohydrate that is instrumental in altering the state of things in these cases of alimentary glycosuria, the constancy with which the precise point at which the alteration that occurs is maintained over a lengthened period of time, and the fact that the different rates at which oxidation of carbohydrate is carried on under different circumstances exert no influence on the result, I consider it is rendered

IMPERMISSIBLE TO SEEK IN THIS DIRECTION

for the explanation that is required.

Is it then possible, in view of the facts that are before us, for the carbohydrate of the food to pass through the circulation to the tissues in the form of free sugar without the transit being revealed by the agency of the urine? Upon non-carbohydrate food, the blood and urine are practically in about the same condition as upon carbohydrate-containing food, and the same, it may be said, applies to the fasting state. Although, then, the urine is such a sensitive indicator of the state of the blood with reference to sugar, and, although, if the food carbohydrate passed in the form of sugar through the circulation there should be a transit of sugar in proportion to the food carbohydrate taken, yet this is to occur without any sign of it being revealed by the urine.

Nothing short of the occurrence of an instantaneous disappearance of the sugar on reaching the circulatory system would meet what is wanted to escape from the output of sugar with the urine, and experiments on the intravenous injection of sugar suffice to show that this does not ensue. Even in experiments with the injection of 0·25 gramme of dextrose per kilogramme body weight, which amounts to only 1-4000th of the weight of the animal, the results show not only a given immediate effect on the blood, but likewise that the effect that is produced only tardily, it may be said, subsides. Coincidently, as might be expected, with the effect on the blood, there occurs an accompanying effect on the urine.

The circumstances connected with the passage of sugar into the circulation

BY MEANS OF INTRAVENOUS INJECTION

are not strictly comparable with those connected with its passage as a sequence to absorption from the alimentary canal. In the latter case, the influence that is capable of being exerted by the interposed liver has to be taken into account. In connexion with the glycosuric state, sugar derived from alimentary absorption passes into the circulation and thence into the urine, just as though it had been intravenously injected. There is, obviously, neither a stoppage at the seat of absorption nor in the liver. But what happens in the case of the carbohydrate falling within the certain limit that can be taken by the glycosuric without rendering itself manifest? Does this also pass into the circulation and become instantly lost by destruction in the tissues? The facts are diametrically opposed to the tenability of such a view, and if, under such circumstances, the carbohydrate passed as sugar into the circulation, it ought rationally to be expected to give indication of doing so, similarly to what occurs after direct introduction by intravenous injection.

Looking from all points of view at the matter that has been considered, the conclusion seems to me to be inevitable that the urine could not escape being affected by carbohydrate food, in proportion to the amount ingested, if transport took place in the form of free sugar through the circulation to the seat of utilisation in the tissues. And yet the view is still seen in some quarters to receive credence. For instance, an *à propos* illustrative case is to be found in the article on the "Metabolism of the Carbohydrates" contained in as late a publication as Leonard

HILL'S WORK ON "RECENT ADVANCES IN PHYSIOLOGY

and Bio-Chemistry," 1906. The article was written by Professor J. J. R. Macleod, now in Cleveland, U.S.A., but formerly a demonstrator of physiology at the London Hospital. Let us look into what is said, and give an eye to the groundwork on which the credence is based.

The article starts with notifying that carbohydrate matter constitutes the greater portion of our food and then specifying that it may range in standard daily dietaries, constructed for different amounts of muscular work, from 240 to 700 grammes. The consideration of how this carbohydrate becomes disposed of within the system is next entered into and dealt with upon lines falling within the teachings of the glycogenic doctrine. Notwithstanding the professed nature of the work in which this article is contained—of the work itself it may be said that, looked at as a whole, it has ably and usefully met a want that existed—it is found that in the article what can be unreservedly spoken of as obsolete errors are in an unqualified manner adopted and made use of as a groundwork for the conclusions set forth.

For instance, in antagonism with the showing of all modern work, it is assumed that the sugar normally present in the blood does not pass out with the urine and that it is only when it stands in excess of 2·0 per 1000, which is put down as constituting the maximum representation of the normal range for the sugar constituent of the blood, that it shows itself in the urine. "With a normal percentage (of sugar) in the blood, the kidney allows none of the sugar to pass into the urine, but whenever this percentage is exceeded, immediate leakage of the excess through the kidney filter occurs" (p. 313). Such is the physiology that is placed before advanced physiologists in connexion with this matter!

The first part of the statement is demonstrably untrue, and the second part is pure fiction. What is there to determine that below 2 per 1000, there shall be no escape, and above, an escape of sugar? The whole thing is not only contrary to fact, but opposed to common-sense reasoning. In reality, with 2 per 1000 of sugar in the blood, an outflow may be looked for sufficient to produce marked glycosuria. The results from intravenous injection justify this conclusion. And these premises, which formed a part of the groundwork upon which the glycogenic doctrine was based, are, in spite of the advance of knowledge that has taken place, put forward in the article in question as if they rested upon a substantial foundation. Evidence in every direction, in reality, unequivocally shows that sugar in the urine runs concordant with that present in the blood.

The author of the article afterwards, in speaking of the

FATE OF THE GLYCOGEN STORED IN THE LIVER,

says (p. 334) "there are two so-called theories, the one by Bernard, the other by Pavy," and then proceeds to pass judgment upon them, by framing four aphoristic propositions, based on Bernard's conclusions, and opposing to them statements that he puts forward as representing conclusions drawn by me. His deduction, which is emphasised

by insertion in italics, runs: "*The balance of evidence stands in favour of Bernard's theory.*"

No useful purpose will be served by entering into the details of the argument adduced. What are complacently spoken of, in the aphoristic propositions, as "facts," and "proofs," constitute, in reality, assumptions of the same order as those I have just been considering, and I do not admit that a faithful representation is given of the grounds of contention that emanate from me. The whole thing, in fact, stands upon too illusory a footing to permit of any conclusion bearing even an approach to substantiality being deducible.

A derisive footnote against my diction is inserted at p. 337 which I do not feel disposed to allow to pass unnoticed. The words of the footnote run: "He (Pavy) considers the intestinal epithelium the first barrier against the passage of sugar into the blood; what escapes this retention filter (*sic*) being caught up by the liver." I have searched and can nowhere find the solecism alleged to have emanated from me, and the style of expression is not such as I can recognise as belonging to me. I suggest that it has much more the aspect of coming from the writer himself, and possibly "caught up" since his transfer from the Physiological Department at the London Hospital to that at Chicago.

There is one point in the argument that ought perhaps to receive consideration because, from the frequency with which I have seen it referred to, it seems to constitute a stock datum for employment in support of the glycogenic theory. "Thirdly," the text runs, (p. 336) "the percentage of sugar in the blood of the hepatic is greater than that of the blood in the portal vein when no absorption of food from the intestine is in progress." In the criticism of what I have advanced upon this point, it is contended, that the quantitative analysis of the blood for sugar is a process which is technically very difficult and is subject to a considerable experimental error. Neither of these propositions I admit, but am content to let them pass. Then it is argued that if "the liver should add dextrose to the blood of the hepatic vein, the percentage increase of sugar thus created could be only very slight, on account of the enormous amount of blood which passes through the organ."

PROFESSOR HALLIBURTON,

whose writings we must all consider, whether agreeing with them or not, as entitled to respect, in his article on the subject of diabetes from the physiological standpoint, in the *Practitioner* for July, 1907, in a similar way deals with my having been unable to find more sugar in the hepatic blood than in the portal blood, saying (p. 3), "Other observers have found an increase in the sugar of the blood leaving the liver, but the estimation of sugar in a fluid rich in proteins is admittedly a matter of difficulty. Even (as the late Sir Michael Foster put it) if the increase is as small as hardly to be detected, it must be remembered that the whole blood of the body passes about once a minute through the liver, so that a very small increase each time would mount up to a large total."

The matter in question bearing

ON THE RELATION OF THE HEPATIC TO THE PORTAL BLOOD,

has become, with the progress of time, to a considerable extent shifted from the position it originally held. In the renowned experiment for showing the sugar-producing action of the liver, the animal was killed, and blood was afterwards collected from the portal and the hepatic veins. The two specimens were heated in capsules with sodic sulphate, and clear liquids obtained for testing with the copper solution. As a result, the contents of the test tube belonging to the portal blood were seen to retain their original blue colour, whilst those of the other showed the production of a copious orange yellow reduction. Upon this basis, and the fact that the liver gave strong evidence of containing sugar whilst the other organs did not, the glycogenic function was founded. The experimental collection of blood by catheterism during life constituted a measure employed by me to show that the hepatic vein blood during life was not in the condition that it had previously been assumed to be from the experimental collection after death. Such was the object of the experiment, and with the portal and hepatic venous blood examined side by side, no difference of behaviour was discernible between the two.

In reality, the proposition under consideration amounts to this. Without the supply of any fresh evidence in connexion with the matter, and upon the strength of the assumption that the hepatic venous blood contains more sugar than the portal blood, it is suggested that the amount of difference may be so small as to escape being susceptible of recognition by analysis, and yet, on account of the large volume of blood passing through the liver, the result might be attended with a large amount of sugar reaching the circulation. The superficial plausibility of this suggestion has produced a widespread effect upon the physiological mind and encouraged the idea that the proposition might in truth be looked upon as valid. The question has not been asked as to what would follow if the suggested passage of sugar into the circulation in reality took place.

In former times, when it was held that an active disappearance of sugar occurred during the passage of the blood

THROUGH THE SYSTEMIC CAPILLARIES,

the amount of difference in the sugar contents of arterial and venous blood was put down as something considerable. Citing one of Bernard's experimental records, the amount given for the arterial blood was 1·450 per 1000, and for the venous, 0·730, expressive of a loss of half of the sugar contained in the arterial blood in its transit through the capillaries. This is now fully known and recognised to be in error. Even by the French school, the contention of former days upon this point is no longer upheld. As long as credence was given to a disappearance of sugar in the systemic capillaries, feasibility existed for its passage into the circulation through the hepatic vein, but what is to occur if there is ingoing, as contended for, through the hepatic vein, and not the disappearance that was formerly conceived to be taking place within the systemic capillaries. The only issue that could follow would be accumulation in the circulation and outflow with the urine, giving rise to glycosuria, which is exactly what I affirm would constitute the state of things existing if the teaching of the glycogenic doctrine were actually carried out.

It must be borne in mind that the amount of sugar that would have to pass into the circulation from the hepatic vein

IF THE CARBOHYDRATE OF THE FOOD HAD TO BE TRANSPORTED

in the form of sugar through the circulation to the tissues for utilisation, would oftentimes be very great, and yet it is not found that any manifest show of it is to be recognised in the blood and in the urine. For instance, in connexion with the standard daily dietaries previously referred to, it was mentioned that the carbohydrate might mount up to 700 grammes. Now, whether the condition is viewed at a period of fasting, on animal food, or on a diet containing either a small amount or a large amount of carbohydrate, the state of things in relation to sugar in the blood and in the urine may be said to be practically the same, but how is this possibly reconcilable with transport through the circulation in the form of free sugar. When the carbohydrate of the food reaches the circulation in the form of sugar, as it obviously does in diabetes, the sugar is recognisable alike in the blood and in the urine, and in the state of health, I contend that the result would be the same if the carbohydrate of the food were similarly permitted to reach the circulation as sugar.

In the face of these considerations, it seems to me unquestionably evident that the carbohydrate of the food cannot pass into the circulation as sugar, as it is alleged to do under the glycogenic doctrine. The writer of the article in Hill's "Recent Advances in Physiology," to which reference has been made, sees the difficulty in relation to this point involved in the doctrine, and reckoning up the carbohydrate contained in the liver, blood, and tissues, states that it does not stand in accord with the absorption that may occur from the food, and admits that it must be concluded that a considerable amount becomes converted into fat or incorporated with proteid (p. 314).

As regards

THE LIVER, WHICH UNDOUBTEDLY PLAYS A PART

in checking the passage of sugar into the general circulation, (I have spoken of the organ as affording a second line of defence against the entry of sugar into the system, functionating upon the sugar that escapes being dealt with at

the seat of absorption in the intestine, during the height of absorption activity, following a copious ingestion of carbohydrate food) the writer in question gives data to show that only a comparatively small portion of absorbed sugar can be accounted for by conversion into liver glycogen, and that therefore, under the view advocated, there must be a large amount of sugar passing into the circulation at the time absorption is going on—a proposition opposed to the fact that neither the blood nor the urine affords evidence of such entry, although both are eminently sensitive to the entry of minimum quantities of sugar effected by the medium of intravenous injection.

The contrast is very great between the effect of the intravenous injection of sugar and that which follows the ingestion of sugar. In the one case, as I have just stated, the blood and urine are influenced in an exceedingly sensitive manner. In the other, as is well known, large quantities of sugar may be ingested without producing any visible effect. If passage into the circulation succeeded absorption, how could it come about that evidence of it could escape being discernible? Here lies the great error under which physiologists have hitherto laboured—the error of assuming that absorbed sugar can reach the circulation without being subsequently open to recognition.

Too much stress must not be laid upon the part played by the liver. I look upon it as simply supplementing the action occurring at the seat of absorption, and that, with a moderate amount of carbohydrate food taken, it is possible that little or no work may be thrown upon the organ. The position assigned to it, however, under the glycogenic doctrine is a far more material one, looked at from the side of the urine being kept free from sugar, inasmuch as it is supposed to constitute the sole agency by which the sugar from the food at the time of active absorption is prevented reaching the circulation in sufficient quantity to affect the urine. If it were not for this, it is considered, a temporary glycosuria would be consequent on a meal. How does this stand in view of the demonstrable fact that in different ways, (Eck's fistula, &c.)

THE LIVER MAY BE CUT OUT OF THE CIRCUIT

of blood without leading to the production of glycosuria? If there were nothing besides the liver to bar the direct passage of absorbed sugar into the general circulation, it is impossible to conceive, after the operative procedure referred to, that the urine could any more escape becoming charged with sugar after ingestion of carbohydrate food than it does after the intravenous injection of sugar. I do not propose to proceed any further with this matter at present, but shall have occasion to refer to it again later.

As the issue of what has preceded, it seems to me impossible that the absorbed sugar from carbohydrate food could possibly reach the general circulation in the form of free sugar without revealing itself by passing into the urine, just as it does in diabetes. During fasting, there is a given amount of sugar in the blood which is revealed by a correlated presence of sugar in the urine. Add to the sugar in the blood, and is the urine to escape giving evidence of the addition? If it did the circumstances would amount to the smaller quantity revealing itself and the larger quantity failing to comport itself upon similar lines. For sugar to reach the circulation without influencing the urine, there must be an immediate disappearance on entrance into the blood, and this, it is known, does not occur.

I have spoken of the facts which lead up to the conclusion that if the carbohydrate of our food reached the circulation for transmission to the tissues in the form of free sugar, it could not fail to give rise, proportionately to the amount doing so, to the presence of sugar in the urine, and thus the condition existing in diabetes. Let us now see upon what ground we stand, in relation to the matter, on applying the transport of free sugar hypothesis as a basis to work upon in the treatment of diabetes.

Looked at in relation to physiology, the glycogenic doctrine is the source of no embarrassment. The dictum is pronounced and nothing further follows, seeing that it is in no way subjected to

THE TEST OF PRACTICAL APPLICATION.

In the case of medicine, it is far otherwise. Diabetes, which arises from a physiological defect connected with carbohydrate metabolism, falls to the province of the physician to deal with, and here the trial of the enunciated physiological hypothesis comes in. Physiologists can look on with complacency, inasmuch as they, in their position, remain untroubled by the effect of error. Whatever the conventional physiological view that may be held, Nature proceeds unobstructedly with her operations, and the issue remains unaffected. To the physician, on the other hand, whose work lies in endeavouring to restrain the ill-effects of the faulty physiological action, the rightness or wrongness of the hypothesis upon which he is basing his procedure, counts for everything.

Now, what does the glycogenic doctrine imply? It implies the entry of sugar into the circulation, and this implies the passage of sugar into the urine, and next follows, as a resulting corollary, the origin of glycosuria from carbohydrate food. How is such a doctrine compatible with the state in which the urine is normally found? It itself, if put into application, would lead to the production of the glycosuric state. It may be said there is always a certain amount of glycosuria existing, harmonising with the limited glycæmia (independent of the functioning connected with our carbohydrate food-supply) that is normally present, and if this latter were increased by the effect derivable from carbohydrate food-supply, a corresponding addition to the normal glycosuria ought to be observed. The output of sugar that occurs after carbohydrate food taken in the presence of alimentary diabetes, gives an indication of the rate and amount of sugar absorption actually occurring.

The glycogenic doctrine

FAILS IN SUPPLYING A RATIONAL BASIS

of action viewed in relation to the treatment of diabetes. Indeed, as has been before stated, it has contributed to leading persons off in the wrong direction and to giving rise to suggestions which, if put into practice, could not do otherwise, as experience shows, than produce a downright pernicious effect. Diabetes being the result of a faulty carbohydrate metabolism, the possession of a right comprehension of the mechanism of the normal metabolism ought to throw a guiding light on the direction in which to apply our efforts for bringing a counteracting influence to bear on the disease.

It is in this way that knowledge is the source of power. It gives us command over phenomena by enabling us, through the instrumentality of designedly modified conditions, to bring about a desired result. For instance, as previously referred to, since the knowledge of the microbic nature of the zymotic diseases was obtained, we have been placed in a position to combat the group of diseases in question with a power altogether different from that which we possessed before. Applying the glycogenic doctrine as a working basis in the treatment of diabetes, a want of congruity confronts us. It is professed to be natural and necessary that sugar should be constantly reaching the circulation, and yet the act of doing so leads to elimination with the urine. In spite of the fact that the system is suffering disastrously from the effects of the presence of a redundance of sugar, there is nothing to suggest, under the tenets of the glycogenic doctrine, that the food-supply of carbohydrate should be cut off, although experience shows that this line of procedure constitutes absolutely the only means by which an improved state of things can be brought about.

By the glycogenic doctrine the

MIND OF THE MEDICAL PRACTITIONER HAS BEEN DIVERTED

from what experience shows to be the right course as regards the treatment of diabetes. There is another matter bearing on treatment which has given rise to an immense amount of confusion and misguidance. I refer to the delusion created by deceptive diabetic food. Persons are too apt to conclude that because an article is advertised and sold as a diabetic bread-stuff it is to be accepted as suitable for use as such. The amount of starchy matter or sugar present, constitutes in reality, the criterion. This can easily be determined by analysis, and analysis is often showing that the reputed diabetic food is but little, or even, it may be, no better than food of an ordinary nature. The opening that here exists for liability to error must be intelligible to all. Not only, on the one hand, is treatment thwarted, but on the other hand, the foundation is laid for erroneous conclusions, touching the disease and its treatment, to be framed.

This brings me to speak again of the work of Professor von Noorden. I notice in Dr. Boardman Reed's translation of

von Noorden's work on Diabetes Mellitus, that the author announces himself to be an advocate of the restricted diet treatment of diabetes. At p. 173, he says, "The first rule that I must lay down is this: the reduction of the glycosuria to the smallest possible limit must be the goal that is never to be lost sight of." Again, at p. 180, after having, in the case of mild forms of glycosuria, advocated commencing the treatment with the restricted diet, notwithstanding even the existence of a certain amount of tolerating power of carbohydrate, and stated that carbohydrate is afterwards to be gradually added to the food, he proceeds: "Care must, of course, be taken that the amount always remains below the level of the toleration limit."

Although thus expressing himself upon principle of action in a manner to which no exception can be taken, what do we find amongst his practical recommendations? That the "oat cure" is added to the longish list of special food cures that have been introduced. In the course of my experience, I can recall the introduction of the "treacle cure," the "honey cure," the "skimmed milk cure," von Duering's "rice cure," and Mossé's "potato cure," as food cures for diabetes. To the list is now added

VON NOORDEN'S "OAT CURE,"

and the claim is made for it that it is superior to the other cures. At p. 195, the statement occurs: "In comparing the potato cure and the oat cure, as I often did for the sake of comparison in the same patient, allowing the one treatment to follow the other, I became convinced of the decided superiority of the oat cure. Severe cases of diabetes react much more favourably on oats than on potatoes. I must, however, acknowledge that there are exceptions, and in appropriate cases [the kind of case to be appropriate is not mentioned] I myself have gladly made use of Mossé's treatment."

Comment is made on the effects of the cures being peculiar and paradoxical, and the limitation of the carbohydrate to *one particular* kind is referred to as constituting an underlying principle. "It would seem," says von Noorden, p. 195, "that the diabetic organism is able—temporarily at least—to regain the power of assimilation for one particular carbohydrate, while still unable to utilise the infinitely smaller amount of the various carbohydrates contained in ordinary food. In my laboratory," he continues, "we have tried to discover whether under the circumstances mentioned particular diastatic or antidiastatic ferments, which effect only one particular carbohydrate, occur in the blood; but the investigations, so far as they have gone, have yielded no positive results. We are obliged to leave to the future the elucidation of this practically and theoretically important question."

I am entering to the extent I am doing into this subject because the name of von Noorden is authoritatively associated with the subject of metabolism and is therefore calculated to exert a weighty influence on the medical mind in connexion with the matter that is under consideration. I must confess, however, that I cannot understand how such a proposition as is set forth above could have emanated from the quarter it has done. The whole thing, as it stands, is a medley of misconceptions and incongruities. What can diastatic or antidiastatic ferments in the blood have to do with the particular kind of starch that may happen to be taken? Starch does not reach the blood. No matter what kind is taken, all are agreed that the starch molecule, whatever its source, is hydrolysed into dextrose preparatory to entrance into the system. How, then, can the source of the starch bear on the question of the utilisation of carbohydrate occurring within the system? Utilisation seems to have been mixed up with the prefatory breaking-down process needed to permit of the passage of the carbohydrate into the system. Speaking upon the strength of my own experience, I can unhesitatingly say that I have seen nothing to lead me to consider that there is ground for surmising that one kind of starch behaves differently in the system of the diabetic from another. Indeed, it would be altogether contrary to rational expectation that it should do so

As regards starch and sugar, the circumstances are different. Starch having to undergo transformation before absorption can occur, it is natural to conclude that it is placed in a position to be prevented entering the system as rapidly and freely as sugar, which is in a fit state for absorption at once. As a matter of fact, it is observable that glycosuria can be produced in the healthy subject by means of copious sugar ingestion, whilst it is possible, it seems, for starch to be tolerated to any extent without the production of glycosuria.

A large amount of fallacy is found to be mixed up with various matters connected with diabetes. Let us see how the "oat cure" stands in this respect. The origin of the oat cure is thus narrated by von Noorden (p. 190). "A few years ago I introduced the so-called oat cure into the treatment of diabetes. It was quite accidentally that I came to recognise its significance. A few patients in my clinic were suffering from severe disturbance of the stomach and intestine. I therefore permitted them nothing but oatmeal gruel. To my surprise the glycosuria did not increase, but became much less than it had been upon the very strict diet."

Now, what did the very strict diet include? We are told that it included the gluten food of Rademann of Frankfurt, mentioned in Table 1 (p. 199), which, it is stated, may find a place in even the most restricted dietary, and which the majority of diabetic individuals may have as much of as they may desire.

It has been my custom for very many years past to have the diabetic foods, foreign and otherwise, that I have been able in the course of practice to come across, analysed for the determination of their carbohydrate content, so that I might keep *au courant* with respect to knowledge of the nature of the supply obtained by patients. As a result I have a large collection of reports from which I often derive much serviceable information. In this way it happens that I have a record of analyses of samples of Rademann's food. The analyses were made a few years before von Noorden's work was published, and, therefore, are probably representative of the food actually referred to by him. One consisted of "diabetic white bread" examined in July, 1900. Taken in the water-free state, it contained 73·4 per cent. of starch. A sample of Zwieback (rusks), examined in March, 1898, contained 72·1 per cent. of starch, and another, examined in November, 1902, 64·8 per cent. of starch.

Where is the strict diet character to be found in connexion with these foods? The figures given for starch in ordinary wheaten bread in the water-free state, to which, for permitting of proper comparison to be drawn, all foods should be brought previous to analysis, run from about 85 to 90, or a little over, per cent. Oatmeal is known to contain less starch than wheaten flour, and the amount may not be greater, if it is not even less, than in the bread-stuff food belonging to the so-called restricted dietary of Professor von Noorden. Actual analysis in the accustomed manner has yielded the following figures:—Quaker oats 69·7 per cent., oatmeal groats 73·2, Scotch oatmeal 74·2. Hence, in the nature of things, there would be no justification for the surprise stated to have been experienced that the oatmeal food did not produce a greater glycosuria than what had been noticed to exist under the so-called very strict diet.

The illusory character of much of what is sold under the denomination of diabetic food has been the source of an immense amount of harm, not only from a practical point of view in connexion with the treatment of diabetes, but likewise through the erroneous impression brought to bear on our mental conceptions relative to the disease. It is easy to understand how readily false conclusions may be framed upon points connected with the disease by assuming a food to be constituted otherwise than it really is. I will leave this subject now but shall have occasion later to refer to it again.

The next point to which I will give consideration is the

STATE OF THINGS FOUND TO EXIST AFTER CUTTING OUT THE LIVER

from the blood circuit. Looked at in relation to the view taken under the glycogenic doctrine, the effect of the operation ought to be attended with the production of glycosuria after the administration of carbohydrate food. Special experimental procedures have been adopted for attaining the desired object, and let us see the nature of the result that has been obtained.

Minkowski, taking advantage of the anastomosis existing in birds between the portal and renal veins, as long ago as 1886,[1] experimented upon geese in relation to the point. It is found, through the anatomical condition existing, that the

[1] Archiv für Experimentelle Pathologie und Pharmakologie Band xxi., S. 41, 1886.

the seat of absorption in the intestine, during the height of absorption activity, following a copious ingestion of carbohydrate food) the writer in question gives data to show that only a comparatively small portion of absorbed sugar can be accounted for by conversion into liver glycogen, and that therefore, under the view advocated, there must be a large amount of sugar passing into the circulation at the time absorption is going on—a proposition opposed to the fact that neither the blood nor the urine affords evidence of such entry, although both are eminently sensitive to the entry of minimum quantities of sugar effected by the medium of intravenous injection.

The contrast is very great between the effect of the intravenous injection of sugar and that which follows the ingestion of sugar. In the one case, as I have just stated, the blood and urine are influenced in an exceedingly sensitive manner. In the other, as is well known, large quantities of sugar may be ingested without producing any visible effect. If passage into the circulation succeeded absorption, how could it come about that evidence of it could escape being discernible? Here lies the great error under which physiologists have hitherto laboured—the error of assuming that absorbed sugar can reach the circulation without being subsequently open to recognition.

Too much stress must not be laid upon the part played by the liver. I look upon it as simply supplementing the action occurring at the seat of absorption, and that, with a moderate amount of carbohydrate food taken, it is possible that little or no work may be thrown upon the organ. The position assigned to it, however, under the glycogenic doctrine is a far more material one, looked at from the side of the urine being kept free from sugar, inasmuch as it is supposed to constitute the sole agency by which the sugar from the food at the time of active absorption is prevented reaching the circulation in sufficient quantity to affect the urine. If it were not for this, it is considered, a temporary glycosuria would be consequent on a meal. How does this stand in view of the demonstrable fact that in different ways, (Eck's fistula, &c.)

THE LIVER MAY BE CUT OUT OF THE CIRCUIT

of blood without leading to the production of glycosuria? If there were nothing besides the liver to bar the direct passage of absorbed sugar into the general circulation, it is impossible to conceive, after the operative procedure referred to, that the urine could any more escape becoming charged with sugar after ingestion of carbohydrate food than it does after the intravenous injection of sugar. I do not propose to proceed any further with this matter at present, but shall have occasion to refer to it again later.

As the issue of what has preceded, it seems to me impossible that the absorbed sugar from carbohydrate food could possibly reach the general circulation in the form of free sugar without revealing itself by passing into the urine, just as it does in diabetes. During fasting, there is a given amount of sugar in the blood which is revealed by a correlated presence of sugar in the urine. Add to the sugar in the blood, and is the urine to escape giving evidence of the addition? If it did the circumstances would amount to the smaller quantity revealing itself and the larger quantity failing to comport itself upon similar lines. For sugar to reach the circulation without influencing the urine, there must be an immediate disappearance on entrance into the blood, and this, it is known, does not occur.

I have spoken of the facts which lead up to the conclusion that if the carbohydrate of our food reached the circulation for transmission to the tissues in the form of free sugar, it could not fail to give rise, proportionately to the amount doing so, to the presence of sugar in the urine, and thus the condition existing in diabetes. Let us now see upon what ground we stand, in relation to the matter, on applying the transport of free sugar hypothesis as a basis to work upon in the treatment of diabetes.

Looked at in relation to physiology, the glycogenic doctrine is the source of no embarrassment. The dictum is pronounced and nothing further follows, seeing that it is in no way subjected to

THE TEST OF PRACTICAL APPLICATION.

In the case of medicine, it is far otherwise. Diabetes, which arises from a physiological defect connected with carbohydrate metabolism, falls to the province of the physician to deal with, and here the trial of the enunciated physiological hypothesis comes in. Physiologists can look on with complacency, inasmuch as they, in their position, remain untroubled by the effect of error. Whatever the conventional physiological view that may be held, Nature proceeds unobstructedly with her operations, and the issue remains unaffected. To the physician, on the other hand, whose work lies in endeavouring to restrain the ill-effects of the faulty physiological action, the rightness or wrongness of the hypothesis upon which he is basing his procedure, counts for everything.

Now, what does the glycogenic doctrine imply? It implies the entry of sugar into the circulation, and this implies the passage of sugar into the urine, and next follows, as a resulting corollary, the origin of glycosuria from carbohydrate food. How is such a doctrine compatible with the state in which the urine is normally found? It itself, if put into application, would lead to the production of the glycosuric state. It may be said there is always a certain amount of glycosuria existing, harmonising with the limited glycæmia (independent of the functioning connected with our carbohydrate food-supply) that is normally present, and if this latter were increased by the effect derivable from carbohydrate food-supply, a corresponding addition to the normal glycosuria ought to be observed. The output of sugar that occurs after carbohydrate food taken in the presence of alimentary diabetes, gives an indication of the rate and amount of sugar absorption actually occurring.

The glycogenic doctrine

FAILS IN SUPPLYING A RATIONAL BASIS

of action viewed in relation to the treatment of diabetes. Indeed, as has been before stated, it has contributed to leading persons off in the wrong direction and to giving rise to suggestions which, if put into practice, could not do otherwise, as experience shows, than produce a downright pernicious effect. Diabetes being the result of a faulty carbohydrate metabolism, the possession of a right comprehension of the mechanism of the normal metabolism, ought to throw a guiding light on the direction in which to apply our efforts for bringing a counteracting influence to bear on the disease.

It is in this way that knowledge is the source of power. It gives us command over phenomena by enabling us, through the instrumentality of designedly modified conditions, to bring about a desired result. For instance, as previously referred to, since the knowledge of the microbic nature of the zymotic diseases was obtained, we have been placed in a position to combat the group of diseases in question with a power altogether different from that which we possessed before. Applying the glycogenic doctrine as a working basis in the treatment of diabetes, a want of congruity confronts us. It is professed to be natural and necessary that sugar should be constantly reaching the circulation, and yet the act of doing so leads to elimination with the urine. In spite of the fact that the system is suffering disastrously from the effects of the presence of a redundance of sugar, there is nothing to suggest, under the tenets of the glycogenic doctrine, that the food-supply of carbohydrate should be cut off, although experience shows that this line of procedure constitutes absolutely the only means by which an improved state of things can be brought about.

By the glycogenic doctrine the

MIND OF THE MEDICAL PRACTITIONER HAS BEEN DIVERTED

from what experience shows to be the right course as regards the treatment of diabetes. There is another matter bearing on treatment which has given rise to an immense amount of confusion and misguidance. I refer to the delusion created by deceptive diabetic food. Persons are too apt to conclude that because an article is advertised and sold as a diabetic bread-stuff it is to be accepted as suitable for use as such. The amount of starchy matter or sugar present, constitutes in reality, the criterion. This can easily be determined by analysis, and analysis is often showing that the reputed diabetic food is but little, or even, it may be, no better than food of an ordinary nature. The opening that here exists for liability to error must be intelligible to all. Not only, on the one hand, is treatment thwarted, but on the other hand, the foundation is laid for erroneous conclusions, touching the disease and its treatment, to be framed.

This brings me to speak again of the work of Professor von Noorden. I notice in Dr. Boardman Reed's translation of

von Noorden's work on Diabetes Mellitus, that the author announces himself to be an advocate of the restricted diet treatment of diabetes. At p. 173, he says, "The first rule that I must lay down is this: the reduction of the glycosuria to the smallest possible limit must be the goal that is never to be lost sight of." Again, at p. 180, after having, in the case of mild forms of glycosuria, advocated commencing the treatment with the restricted diet, notwithstanding even the existence of a certain amount of tolerating power of carbohydrate, and stated that carbohydrate is afterwards to be gradually added to the food, he proceeds: "Care must, of course, be taken that the amount always remains below the level of the toleration limit."

Although thus expressing himself upon principle of action in a manner to which no exception can be taken, what do we find amongst his practical recommendations? That the "oat cure" is added to the longish list of special food cures that have been introduced. In the course of my experience, I can recall the introduction of the "treacle cure," the "honey cure," the "skimmed milk cure," von Duering's "rice cure," and Mossé's "potato cure," as food cures for diabetes. To the list is now added

VON NOORDEN'S "OAT CURE,"

and the claim is made for it that it is superior to the other cures. At p. 195, the statement occurs: "In comparing the potato cure and the oat cure, as I often did for the sake of comparison in the same patient, allowing the one treatment to follow the other, I became convinced of the decided superiority of the oat cure. Severe cases of diabetes react much more favourably on oats than on potatoes. I must, however, acknowledge that there are exceptions, and in appropriate cases [the kind of case to be appropriate is not mentioned] I myself have gladly made use of Mossé's treatment."

Comment is made on the effects of the cures being peculiar and paradoxical, and the limitation of the carbohydrate to *one particular* kind is referred to as constituting an underlying principle. "It would seem," says von Noorden, p. 195, "that the diabetic organism is able—temporarily at least—to regain the power of assimilation for one particular carbohydrate, while still unable to utilise the infinitely smaller amount of the various carbohydrates contained in ordinary food. In my laboratory," he continues, "we have tried to discover whether under the circumstances mentioned particular diastatic or antidiastatic ferments, which effect only one particular carbohydrate, occur in the blood; but the investigations, so far as they have gone, have yielded no positive results. We are obliged to leave to the future the elucidation of this practically and theoretically important question."

I am entering to the extent I am doing into this subject because the name of von Noorden is authoritatively associated with the subject of metabolism and is therefore calculated to exert a weighty influence on the medical mind in connexion with the matter that is under consideration. I must confess, however, that I cannot understand how such a proposition as is set forth above could have emanated from the quarter it has done. The whole thing, as it stands, is a medley of misconceptions and incongruities. What can diastatic or antidiastatic ferments in the blood have to do with the particular kind of starch that may happen to be taken? Starch does not reach the blood. No matter what kind is taken, all are agreed that the starch molecule, whatever its source, is hydrolysed into dextrose preparatory to entrance into the system. How, then, can the source of the starch bear on the question of the utilisation of carbohydrate occurring within the system? Utilisation seems to have been mixed up with the prefatory breaking-down process needed to permit of the passage of the carbohydrate into the system. Speaking upon the strength of my own experience, I can unhesitatingly say that I have seen nothing to lead me to consider that there is ground for surmising that one kind of starch behaves differently in the system of the diabetic from another. Indeed, it would be altogether contrary to rational expectation that it should do so

As regards starch and sugar, the circumstances are different. Starch having to undergo transformation before absorption can occur, it is natural to conclude that it is placed in a position to be prevented entering the system as rapidly and freely as sugar, which is in a fit state for absorption at once. As a matter of fact, it is observable that glycosuria can be produced in the healthy subject by means of copious sugar ingestion, whilst it is possible, it seems, for starch to be tolerated to any extent without the production of glycosuria.

A large amount of fallacy is found to be mixed up with various matters connected with diabetes. Let us see how the "oat cure" stands in this respect. The origin of the oat cure is thus narrated by von Noorden (p. 190). "A few years ago I introduced the so-called oat cure into the treatment of diabetes. It was quite accidentally that I came to recognise its significance. A few patients in my clinic were suffering from severe disturbance of the stomach and intestine. I therefore permitted them nothing but oatmeal gruel. To my surprise the glycosuria did not increase, but became much less than it had been upon the very strict diet."

Now, what did the very strict diet include? We are told that it included the gluten food of Rademann of Frankfurt, mentioned in Table 1 (p. 199), which, it is stated, may find a place in even the most restricted dietary, and which the majority of diabetic individuals may have as much of as they may desire.

It has been my custom for very many years past to have the diabetic foods, foreign and otherwise, that I have been able in the course of practice to come across, analysed for the determination of their carbohydrate content, so that I might keep *au courant* with respect to knowledge of the nature of the supply obtained by patients. As a result I have a large collection of reports from which I often derive much serviceable information. In this way it happens that I have a record of analyses of samples of Rademann's food. The analyses were made a few years before von Noorden's work was published, and, therefore, are probably representative of the food actually referred to by him. One consisted of "diabetic white bread" examined in July, 1900. Taken in the water-free state, it contained 73·4 per cent. of starch. A sample of Zwieback (rusks), examined in March, 1898, contained 72·1 per cent. of starch, and another, examined in November, 1902, 64·8 per cent. of starch.

Where is the strict diet character to be found in connexion with these foods? The figures given for starch in ordinary wheaten bread in the water-free state, to which, for permitting of proper comparison to be drawn, all foods should be brought previous to analysis, run from about 85 to 90, or a little over, per cent. Oatmeal is known to contain less starch than wheaten flour, and the amount may not be greater, if it is not even less, than in the bread-stuff food belonging to the so-called restricted dietary of Professor von Noorden. Actual analysis in the accustomed manner has yielded the following figures:—Quaker oats 69·7 per cent., oatmeal groats 73·2, Scotch oatmeal 74·2. Hence, in the nature of things, there would be no justification for the surprise stated to have been experienced that the oatmeal food did not produce a greater glycosuria than what had been noticed to exist under the so-called very strict diet.

The illusory character of much of what is sold under the denomination of diabetic food has been the source of an immense amount of harm, not only from a practical point of view in connexion with the treatment of diabetes, but likewise through the erroneous impression brought to bear on our mental conceptions relative to the disease. It is easy to understand how readily false conclusions may be framed upon points connected with the disease by assuming a food to be constituted otherwise than it really is. I will leave this subject now but shall have occasion later to refer to it again.

The next point to which I will give consideration is the

STATE OF THINGS FOUND TO EXIST AFTER CUTTING OUT THE LIVER

from the blood circuit. Looked at in relation to the view taken under the glycogenic doctrine, the effect of the operation ought to be attended with the production of glycosuria after the administration of carbohydrate food. Special experimental procedures have been adopted for attaining the desired object, and let us see the nature of the result that has been obtained.

Minkowski, taking advantage of the anastomosis existing in birds between the portal and renal veins, as long ago as 1886,[1] experimented upon geese in relation to the point. It is found, through the anatomical condition existing, that the

[1] Archiv für Experimentelle Pathologie und Pharmakologie Band xxi., S. 41, 1886.

PRINT IN BINDING

portal vein can be ligatured and the liver extirpated, without interfering with the circulation through the other abdominal organs. In one recorded experiment, the liver was extirpated after the administration of 25 grammes of dextrose and 25 grammes of starch. During the succeeding 10 hours, 220 cubic centimetres of urine were collected, which, on subjection to alcoholic extraction, yielded an indication of the presence of 0·5 gramme of dextrose. A further 200 cubic centimetres were secreted during the night, and this was found to be free from sugar. In a second recorded experiment, 75 grammes of dextrose were employed. During 12 hours after the operation, 330 cubic centimetres of urine were obtained in which 4·2 grammes of dextrose are stated to have been found, which represent a minute portion only of the dextrose administered. The intestinal contents, it is mentioned, only contained a trace of sugar.

Eck's fistula is the name given to an operative junction of the portal vein with the inferior cava, permitting of the former vessel being tied above the junction and thus cutting off the flow through the liver without interfering with the circulation through the abdominal viscera. The operation is naturally a very delicate and risky one, but it has proved susceptible of being performed upon dogs with survival of the animals in a satisfactory condition for a considerable time afterwards.

Hahn, Massen, Nencki, and Pawlow have published a communication in Schmiedeberg's *Archives*,[2] containing the results of observations on the effects of the operation upon the system. The operative part of the undertaking was performed by Massen and Pawlow, and the chemical part by Hahn and Nencki. A striking effect noticed was the production of an intolerance of animal food. The dogs subsisted well upon bread and milk, but meat produced a toxæmic state accompanied with various manifestations of nerve disturbance. The authors state that they never found albumin, albumose or sugar in the urine, but there is no indication of any idea of looking for sugar in connexion with carbohydrate food administration as a sequence of the position in which the liver was placed.

A communication entitled "On Carbohydrate Metabolism in Dogs with Eck's Fistula, whereby the Portal Blood passes direct into the Vena Cava without traversing the Liver" has been recently published by F. De Filippi of Rome in the *Zeitschrift für Biologie*.[3] A series of observations was conducted upon the toleration of various carbohydrates after recovery from the operation, and finally the actual occlusion of the portal vein was verified by post-mortem examination. The ordinary food administered consisted of bread and milk and wheat-flour porridge, which never, it is stated, produced glycosuria. After the different sugars, however, glycosuria occurred when certain quantities were reached standing below those required to produce glycosuria in the case of dogs in the normal state.

Corresponding results, I perceive, are stated to have been obtained by other experimentalists. For instance, I observe it stated[4] in connexion with the fate of sugar given to dogs with Eck's fistula, that Popelski, in 1898, found, after feeding with large quantities of saccharose, that against 1 per cent. of the ingested sugar eliminated by normal dogs, 13·5 per cent. was eliminated by the dog with the fistula; and quite recently mention is made by P. B. Hawk[5] of absence of glycosuria having been observed in a dog with Eck's fistula on a diet of milk, bread, and potatoes. The concurrent testimony seems to be that whilst sugar can lead to the production of glycosuria, starchy matter, on the other hand, fails to do so.

Everything points to the existence of a missing link in the chain of events thus far reckoned to occur in connexion with the passage of carbohydrate from the seat of absorption in the walls of the alimentary canal to that of utilisation in the tissues. We know that small quantities of sugar reaching the circulation by intravenous injection, lead to the production of glycosuria, and why should they not do so when absorbed from the alimentary canal? The liver has been credited with safeguarding the circulation from the entry of sugar in a manner to occasion glycosuria, but how do things stand in the face of the evidence that has been just adduced, founded upon the state observed to exist after the abolition of the influence of the organ?

[2] Band xxxii., p. 161, 1893.
[3] Band xlix., 1907.
[4] Maly's Jahresbericht, Band xxviii., p. 369.
[5] American Journal of Physiology, vol. xxi., p. 259, 1908.

HEREDITY IN DISEASES OF THE NERVOUS SYSTEM.[1]

BY SIR WILLIAM R. GOWERS, M.D. LOND., F.R.S.,
CONSULTING PHYSICIAN TO UNIVERSITY COLLEGE HOSPITAL; PHYSICIAN TO THE NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, QUEEN-SQUARE, LONDON, W.C.

THE scientific study of heredity, which has undergone so wonderful a development, especially since the mists were swept away which for long had hidden Mendel's work, cannot be applied fully to the diseases of man. The human race is not open to Mendel's essential methods, and its mere complexity of development involves innumerable differences from lower forms of life, the effects of which may be greater than we can well realise. Potential fallacies surround almost every inference that can be drawn. We can seldom look back far at preceding generations and the future we must leave to those who may follow us. The difficulties of precision and fulness of knowledge are great and the chance fertilisation, from which the flowers of Mendel were guarded by his paper bags, is the rule in the human race, unalterable by us, however we may wish. Hence it seems useless even to apply the hereditarian terminology to facts that are in general inconsistent with its grounds. I can only hope to present a few of the general facts of heredity in some diseases of the nervous system, well known as they are, and I trust that they will be supplemented by others. We are only in the stage of random observation.

Among diseases of the nervous system are commonly included many that are not of it but merely in it, and these can scarcely be included. Tumours of the brain and spinal cord are allied to morbid growths in general for the most part. Yet many of them have a special relation to nervous tissue, such as gliomata, composed of the special interstitial elements of the nerve centres. Endotheliomata, growing from the lining tissue of the cavities and surface of the brain and spinal cord, we do not know how to class, whether with the centres in which they are found or with growths of the same character elsewhere. But all such affections are so rare that they have not yet justified any suggestion of heredity. This is also true of another condition in which heredity might reasonably be expected, the defect in the coarser formation of the spinal cord which leads to the cavities and undeveloped embryonal tissue adjacent of syringomyelia. It is sometimes found after death when there have been no symptoms to suggest it. When the causal arrest of development has occurred earlier and involved the inclosing structures it constitutes a state often conspicuous in infancy, spina bifida. Heredity in these affections may be thought likely, but no ground for it has been, I think, discerned, and may not be until every member of the family can be scrutinised after death. Insular sclerosis is another affection in which heredity might be expected according to one view of its nature, but no facts have suggested it.

Sudden cerebral seizures, apoplexy and the like, depend upon causes that take their heredity far away from the brain in which the lesion occurs. Yet the frequency in which heredity is active is most notable. In some families many members suffer earlier in life than the malady is really common. But we must look to the vessels and the cause of their degeneration for the mechanism by which the disease is produced and through which heredity acts. Toxic states, various in nature and origin, chemical and microbial, are potent causes of disease, but the range of heredity in their occurrence is small. The so-called "inherited syphilis" has, of course, nothing to do with heredity. I do not know of any observations on the children of those who suffer from it and their life-histories. Any influence heredity may have on the liability to suffer from bacterial maladies affecting the nervous system may, perhaps, be suggested by the discussion on the similar facts regarding tubercle. The part it may play in the secondary production of chemical agents from organisms acting on somatic processes is an important problem. It is presented by the paralysis that sometimes follows diphtheria. The experience of our fever hospitals may furnish evidence for or against any family tendency to suffer

[1] A paper read before the Fellows of the Royal Society of Medicine on Nov. 11th, at the discussion on Heredity, with Special Reference to Cancer, Tuberculosis, and Disease of the Nervous System.

from it. I think the tendency is not directly proportioned to the severity of the primary disease. There must be very many instances of several members of a family suffering from diphtheria and it is most important that the records should be so kept as to facilitate observation of the disease in another generation of the same family. Such search will be necessary in the case of many diseases and will involve a special method of indexing; nothing can be achieved unless it is begun.

It would be wearisome even to enumerate the maladies from which we cannot hope to obtain knowledge but I may mention one class of disease on which we may hope for some facts. Though they are not primarily of the nervous system they often affect it gravely. There are those that consist of deranged chemical processes in the vital laboratory of the human frame giving rise to endogenous toxins. We see it in the nerve disturbance which occurs in diabetes, probably due to other material incidental to that by which the excess of sugar is produced, whether or not it is the same as that which often causes death. The heredity of diabetes is familiar but its thorough study is a difficult task. A child not seldom suffers before a parent. The endogenous poisons of what we call gout are certainly many and some also occur without this constitutional state. Both kinds may cause symmetrical symptoms in the extremities but of their nature we know nothing. It cannot be doubted that the processes of the body are largely influenced by heredity.

The cases of disease of the nervous system in which the influence of heredity is marked seem to fall in certain classes. One of these consists of the early abiotrophies. I proposed this term some years ago[1] as a convenient designation for the cases in which certain systems of structure in the nervous or muscular system have an essential defect of vital endurance, in consequence of which their life slowly fails. A marked example is presented by the hair follicles of the scalp, in consequence of which early and extensive baldness occurs in father and son, a convenient subject for the study of heredity. It is seen in the nervous system, as in hereditary optic atrophy, in which the onset is sometimes excited by some extraneous cause, inadequate alone to cause the enduring effect. Hereditary ataxy, or Friedreich's disease, is another, and so are the various myopathies. By "early" I mean those abiotrophies which begin before the development which coincides with growth is over, and often not many years after birth.

The muscles are not usually considered part of the nervous system although they present a close relation to it in intimate structure and function. We may take the most typical form of pseudo-hypertrophic paralysis as a convenient instance of the heredity of the abiotrophies. The muscular fibres begin to waste during the first seven years of life but the bulk of many of the muscles is actually increased by interstitial overgrowth of fibrous tissue and fat; certain muscles are small and some may seem absent from the first. This disease is due only to heredity, but the heredity is maternal only; it never comes from the father. The tendency to it is thus germinal, a potential defect of development in part of the ovum, that part which will become the muscles. But it is not usually in all the ova; some sons escape. The female children seldom suffer in this typical form, but they inherit the tendency, or some of them do, and their sons are prone to suffer. In the ova from which the daughters develop, the potentiality of the disease is not in the elements that develop into the muscles, but only in that portion of the protoplasm which will become the germinal tissue for another generation. The same facts are true of other early atrophies, in hereditary optic nerve atrophy, &c.; sometimes they are limited to males, but they are only transmitted by females. If the tendency is thus fixed in the germ tissue, and differently fixed, according to the resulting sex, does not the fact make it probable that the sex is also predetermined? Many have held this view and it is not easy to see how otherwise the facts of these diseases can be explained. The disposition to the disease seems seldom to be present in every ovum. Sometimes it apparently is in every male ovum. Every son has died, as in the well-known family described in the "fifties" by Dr. Meryon, but in that one daughter has failed to transmit the disease; another daughter has had two sons and three daughters—both the sons have died from it, all the daughters are free. In an instance which came under my notice long ago four sons died but the fifth escaped and his sons, of course, are free, but the only daughter, herself free, has her only two sons both affected.

We have many similar instances of the disease in two generations. We have known it just long enough—sixty years—to find it in a second generation, but it is curious how seldom we are able to trace the typical disease in preceding generations, although we are not often able to exclude it from lack of knowledge. But I have met with it in the two sons of a lady (the third and sixth of seven sons) whose lineage and that of the mother of Meryon's cases can be obtained from the Peerage. (I cannot mention the names since members of the families are still alive.) The lineage presents a remarkable fact. Both mothers were descended from a certain duchess who was married in 1774, and in the case of each the descent is solely in the female line. The mother of Meryon's cases I will call Lady A and the other Lady B. Lady A was the granddaughter of the said duchess; Lady B is the great-great-granddaughter. There were sons in both lines, but from their ages at death in Lady A's family there can have been no case of the disease. In Lady B's there is only one that suggests its possibility. A son of her maternal grandmother died at 18, but some other cause is intrinsically more probable. We must, I think, regard it as of definite, though unknown, significance that both these maternal producers of the disease had a single ancestor, and, considering the relation of the disease to sex, their descent by the female line cannot be regarded as an accident. I can offer no suggestion of its meaning. But it is remarkable how free from the disease the ancestors of those who produce it generally seem to be. We may note that isolated cases are more frequent than groups, although the groups comprehend a majority of the actual cases. When females suffer males sometimes escape. Only once have I known the disease to occur in the offspring of first-cousins. There resulted four cases of albinism, one of whom had also pseudo-hypertrophic disease. Neither malady had occurred before. But there had been some previous instances of less close intermarriage during the preceding six generations, and, considering the relation of the disease to the ovum, it can hardly be ascribed to the consanguinity of the actual parents. Of the origin of albinism I hope we shall hear more in the course of the discussion.

Other forms of myopathy have been traced through several generations. The facial form of Déjerine and Landouzy has been traced through five generations. This form often does not begin early; its progress may go on through life, and males may transmit it. The first series of Déjerine and Landouzy, just mentioned, bears a distant but interesting resemblance to Mendel's facts. A man and woman married, the woman being atrophic. They had one daughter who was normal, who married a quite healthy man and bore three daughters, all affected. One of these married a healthy man and had two children, a girl, healthy, and a son in whom the atrophy only showed itself at 26, and did not become general until 50. He married a healthy woman and had nine children, six sons and three daughters. A son and daughter died in childhood; of the remaining seven, four were atrophic, two sons and two daughters. If we regard the normal state as dominant and the atrophy as a recessive state, its absence in the second generation, recurrence in the third, and equality in the fourth and fifth are noteworthy features. I have dwelt on these muscular maladies because they present features that are well defined, and because most, if not all, the early nerve abiotrophies agree with them in origin, even in their maternal heredity.

A second class may include the hereditary maladies which begin later in life, after the period of growth is over. They present persistent disturbance of function and are commonly hereditary, but from either side. In the so-called hereditary ataxy of Marie, the symptoms begin about 30 and are usually fatal in about 20 years. It has been found to depend on atrophy of the cerebellum associated with certain tracts of the spinal cord, at least in one case in which three generations were affected. Huntington's chorea begins usually in the senile period of life, but its heredity is well marked and so is that of the peculiar rigidity called Thomsen's disease, a life-long peculiarity of action of the motor nerve structures, also called myotonia congenita.

I must pass some interesting diseases, paralysis agitans, tremors, Graves's disease, &c., in which heredity can be

[1] THE LANCET, April 12th, 1902, p. 1003.

traced seldom but sometimes remarkably. I think it is probable that we shall hereafter find that special forms of heredity are associated with other characters in a manner that will make it an aid in distinguishing maladies that are now classed together but for this we must wait.

A third class of diseases in which heredity is operative consists of the so-called functional affections. Some of them vary extremely in degree and baffle attempts to group them so as to discover their relation to heredity. Such are hysteria and the defective nerve strength which may manifest itself in varied ways and which we are all drawn, sometimes against our better judgment, to designate "neurasthenia." Other functional disorders, such as chorea and neuralgia, have relations too complex for the clear discernment of heredity; and migraine, defined as it is, is connected with quite different constitutional states than disease of the nervous system. Two forms of functional disease have been much studied in relation to heredity, epilepsy and insanity. I propose to confine myself to epilepsy, leaving the relations of insanity to those who take part in the subsequent discussion.

Some cases of epilepsy are outside our subject. Those that result solely from organic lesions of the brain, from disease, or trauma, or difficult birth are not concerned with heredity. I confess I have always acted on the belief that the tendency to convulsion in such acquired cases, without other evidence of disposition, may be regarded as not transmissible. I have never hesitated, on this ground, to permit the marriage of a sufferer, and I have not had any evidence to show that I was wrong in doing so, however early in life the damage arose. I do not question the guinea-pigs of Brown-Séquard, but I do question an inference from guinea-pigs to men. But such cases of "organic epilepsy" are rare. They constitute so small a proportion of the cases as to have little influence in statistics of heredity. The difficulties in ascertaining the facts of family histories are vast. Among hospital patients genuine ignorance often hinders. A woman brought her son for epilepsy and denied that any of his relations had had fits. As soon as she had gone out of the room she returned with two of his brothers suffering from them. It had not occurred to her that a brother is a relation. In patients seen in private the stigma supposed to attach to some diseases leads to concealment, which produces actual ignorance in another generation. A middle-aged lady, with an epileptic nephew, denied any neurotic antecedents and was indignant when I told her that three great-aunts had been in asylums. But it was so.

In my own inquiries into the heredity of epilepsy I have limited myself to these two maladies, epilepsy and insanity. I find that in the cases seen in private there is a family history of one or both in 47 per cent., in antecedents and present or past collaterals. The difficulties I have just mentioned justify the assumption that at least 50 per cent., and probably more, really present a family tendency. Among hospital patients the number is not more than 35 per cent., so great a difference does ignorance apparently make. In the facts presented the percentage was taken from 2400 cases, of which 600 were seen in private. Heredity was ascertained in 39 per cent. of 1193 males and 43 per cent. of 1207 females. These proportions are much less than have been ascertained by others who have included a larger number of diseases. It may be well to confine myself to the cases in which a parent suffered. Jeremy Taylor tells us in one of his sermons that "an epileptick son doth often come from an epileptick father." Of the total cases in which inheritance was paternal the father himself suffered in 40 per cent., when maternal the mother suffered in only 36 per cent. When epilepsy itself occurred in a parent it was the father who was epileptic in 49 per cent. of the cases, the mother in 51. The cases with insanity in a parent are only one-third the number with parental epilepsy. Of the cases with parental insanity, the father was insane in 37 per cent., the mother in 63. One effect of heredity is to increase the female cases. Where it was absent the excess of males amounted to 4 per cent., but in cases with heredity the same excess was presented by females. This is partly due to the fact that inheritance is more frequently from the mother's side by 13 per cent., and that then females are in excess by 18 per cent. The influence of heredity is sometimes strikingly emphasised by the number of sufferers in a family. In one instance six brothers suffered, their mother, two of her sisters, and both her parents. In another five sisters, five of their children, the mother, her brother's son, and her own mother.

Such facts might be multiplied almost indefinitely regarding many diseases. We are told we are working on an entirely wrong method. Diem states that he has found neuropathic heredity in nearly 70 per cent. of healthy persons. If he has included every conceivable malady that involves the nervous system it is quite credible but of no significance. It has been urged that the essential facts for every member of each generation must be recorded to make observations of value. We hope to learn much regarding method from those who are here to-day. They have devoted much time and much ability to the scientific study of heredity, and they may tell us how to make our own observations more effective.

Queen Anne-street, W.

HEREDITY IN CANCER.[1]

BY E. F. BASHFORD, M.D. EDIN.,

GENERAL SUPERINTENDENT OF RESEARCH AND DIRECTOR OF THE LABORATORY OF THE IMPERIAL CANCER RESEARCH FUND.

THE successful application of the comparative and experimental methods appears to be greatly narrowing the field of inquiry and dismissing many explanations of cancer—previously held with good reason—from further serious consideration. Although this is the case, we still know very little as to its etiology beyond the fact that it manifests itself under the most divergent conditions and in such a way that we may have to entertain the possibility of several etiological factors, some of which are external and some internal to the body. To these factors we are only justified at present in assigning an indirect and mediate etiological significance. The most satisfactory explanation of the causation of cancer will probably be that implied by the accurate description of the nature of the transformation of normal into cancer cells when this advance in knowledge shall have been attained.

In surveying the incidence of cancer in the vertebrate kingdom one has been struck by the fact that certain forms of cancer appear to preponderate in different classes. It is, of course, obvious that the incidence of cancer in representatives of the different zoological classes must differ, since, e.g., structures peculiar to mammals are absent in other vertebrates. But if we consider the mammalia themselves, it appears probable that some species are very liable to forms of cancer, from which others even nearly allied are relatively or altogether exempt, as illustrated, e.g., by the variations in the frequency with which cancer of the uterus or mamma occurs. Cancer of the breast, so common in the human female, is also common in the mouse and dog, but practically unknown in the cow, which, however, suffers quite frequently from primary growths of the liver and adrenal. These tendencies are so constant that it is difficult to escape the conclusion that they depend on innate characters which are hereditarily transmissible, and there can be no doubt as to their etiological importance, although we cannot yet penetrate to their meaning.

Even in the same species we meet with similar idiosyncrasies—e.g., in the greater liability of grey than of other horses to melanotic sarcoma. It may, of course, be argued that these peculiarities in the incidence of the disease are determined by peculiar environment, or by the use to which the organs are put in different species, although this would hardly hold for grey as contrasted with other horses, the disease in question affecting only the pigment cells of the skin. If we compare the tame albino mouse with the wild grey mouse the incidence of cancer is parallel in them, although the two varieties live under very divergent conditions; therefore the liability of the mouse to carcinoma of the mamma appears to be due to an innate tendency.

When we compare the large natural groups of vertebrates, or even the species of the mammalia, the grounds on which we may assume that differences in the incidence of cancer are innate and hereditarily transmitted appear safe. But

[1] A paper read before the Fellows of the Royal Society of Medicine on Nov. 18th, at the adjourned discussion on Heredity, with Special Reference to Cancer, Tuberculosis, and Disease of the Nervous System.

when we come to compare the differences in the incidence of cancer in the individuals of a species we are not on such certain ground. We know most about cancer in man. The extraordinary frequency of cancer of the skin of the abdomen in Kashmiris as compared with Europeans would at once suggest some racial difference were it not that we know the causative factor in this case to be one of custom. The Kashmiris wear a charcoal oven against the abdominal wall and Europeans do not. Many other instances could be quoted all pointing in the same direction. Taking the surface of the body as an example, the incidence of cancer in different races of mankind is characterised on the whole not so much by innate racial peculiarities as determined by extrinsic irritants. Why some individuals escape the consequences of peculiar practices involving chronic irritation and others do not it is at present impossible to decide. Disregarding all other hypotheses we fall back on an undefined susceptibility of the body which we conceive as being more exaggerated in some persons than in others. There is certainly no evidence for the inheritance of cancer as such, only the possibility of a predisposition can be discussed.

To ascertain the part heredity may play in leading up to this predisposition we can resort to statistical or to experimental methods. It is quite possible to discuss the part heredity may play in the incidence of disease without discussing any other causative factor; but in any such attempt the investigator will be biased according as he believes that the particular disease under discussion is purely endogenous or purely exogenous in origin. Now although it would be without the bounds of my subject to make an excursion into the cause or causes of cancer I think it well to preface what I have to say regarding heredity by stating that in recent years a great deal of new evidence has been accumulated in support of the view that a malignant new growth contains nothing foreign to the organism attacked. I may instance two classes of new facts.

I. Carcinoma and sarcoma can be grown continuously only in other individuals of the same species of animal. The continuous growth which follows transplantation can only be prevented by vaccinating with the normal tissues or malignant new growths of the same species, and the degree of protection normal tissues confer is so much the greater the more nearly the tumour transplanted corresponds to the normal tissue used to induce protection. From these observations it is deducible that the malignant new growths of a species retain not only the tissue characters of the species but also the bio-chemical as well as the histological characters of the several tissues of the individual species.

II. Investigations into questions of metabolism—viz., into the relation of a malignant new growth to its host—have shown (*a*) for sporadic tumours in Murray's experiments; (*b*) for Murray's and Haaland's experiments on transplanted tumours; (*c*) for Cramer's and Copeman and Hake's experiments on the gastric secretion in mice affected with spontaneous and transplanted cancer; and (*d*) for Cramer's observations on the gaseous metabolism in rats bearing transplanted sarcoma, that the relations of a malignant new growth to its host are merely those of nutrition—of the demand for, and the supply of, the normal foodstuffs from which tissue is built up, and analogous to those obtaining between fœtus and mother. There is no evidence of pathological products, toxins, ferments, or what not, which *per se* cause ill-health. There is no analogy with any known form of infective disease. This being so, we may seek primarily for the cause of cancer within the body itself in the biological properties of its cells as contrasted with exogenous causes.

The fact that cancer may develop as a response to diverse external agencies, acting as mediate causes, is thereby not excluded, although the ultimate origin of cancer is sought in a biological alteration of what were normal cells. This conception of the origin of cancer seems to indicate that a variable and perhaps inherited predisposition or vulnerability towards excitants is not a possibility to be lightly dismissed. How otherwise are we to explain why one patient responds not at all, another, e.g., with a chronic ulcer, and a third with a malignant new growth at the site of irritation, in which series of events the nature of the irritant appears to be of less moment than the point to which it is applied, and the points of application themselves may be anywhere on the surface of the body? A direct endeavour to ascertain by statistical methods whether heredity selects those who suffer from cancer requires at the outset a clear conception of its distribution among the population as a whole, and of the nature of the evidence which would justify us in deducing that those who suffer from it are afflicted because their ancestors also succumbed to the disease. It is therefore necessary to point out how frequent cancer is as a cause of death, in those members of the community generally, who are above 35 years of age, and because this is so, to anticipate that if heredity play any part it will be a dominant part. On the assumption that an inborn tendency to cancer is transmitted we will expect to find, if we examine a large number of families of which one or more members have suffered from cancer, that the number of cases occurring in them greatly exceeds the average number in the population as a whole, regard being of course paid to distribution for age and sex. On a closer analysis of the family histories of those who suffer from cancer and of those who do not we would expect the population to fall easily and naturally into two groups: (1) in which the disease develops not at all or only as a rare variation; and (2) in which it appears and reappears with constancy in a very high proportion of all the lineal descendants who attain to the "cancer ages." If this easy grouping should not be attainable it will not be permissible to resort to subsidiary assumptions to explain why the disease appears to skip a generation or generations in the direct line of descent, or to make up for the deficiency of the evidence of lineal transmission by bolstering it up with the irrelevant occurrence of cancer in collateral descendants. To be obliged to have recourse to either the one or the other of these supports is tantamount to discarding the thesis that if hereditary then it will be so in proportion to the degree of concentration of the hereditary factor.

The great frequency of cancer is best illustrated by the returns of the Registrar-General which show that in 1906, out of a total of 141,241 deaths of males above 35 years of age 12,695 died from cancer, and out of a total of 140,607 deaths of females over 35 years of age 17,671 died from cancer. Thus, the chance, assuming no more heredity than is shown by an average member of the entire population, that a man over 35 years of age will die from cancer is 1 in 11 and the chance for a woman above the same age is 1 in 8. A calculation based on a similar approximation for 1905 shows how often, taking the proportions as 1 in 12 and 1 in 8, no death, or one, two, three, &c., deaths from cancer may be expected to be recorded in 100 families, half the members of which are men and half women, *no hereditary tendency being assumed* beyond what is indicated above and excluding all persons dying under the age of 35.

Number of deaths from cancer in family.	Per 100 families of 6 members, viz., 3 men, 3 women.	Per 100 families of 8 members, viz., 4 men, 4 women.	Per 100 families of 10 members, viz., 5 men, 5 women.
None	51	41	33
One	36	39	39
Two	11	16	20
Three or more ...	2	4	8
	100	100	100

The calculation establishes the fact that when no hereditary influence is assumed the frequency of cancer as a cause of death is so great that few families of large size escape and in one of every two families either a parent or a grandparent will on an average have died from cancer, supposing such parents and grandparents to have died after 35 years of age. Suppose a man and wife both of whom died from cancer 60 years ago; further suppose that of their children, three males and three females, all survived and married and that two of them, one male and one female, married children of parents who died from cancer like their own parents, while the others married into families with no history of cancer. Were it possible to follow the fate of all descendants of these six families the comparative frequency of cancer in those of double cancerous heredity and in those of single cancerous heredity might be expected to show whether a tendency to the disease is transmitted. Were accurate detailed analyses obtainable of the incidence of cancer in a large number of families, and if they showed

great variations in accordance with the frequency of cancer in their progenitors above and below the average given in the preceding table, the division of the population into groups with and without a family susceptibility would be practicable and the investigation of possible hereditary factors feasible in the case of man.

The segregation of the general population into such groups is, however, rendered very difficult, because the great frequency of cancer as a cause of death in adult life discounts very largely any value which might otherwise attach to a succession of cases or to its mere appearance and reappearance in a family as evidence of heredity; the peculiarities of its age-incidence make it difficult to know what proportion of relatives have suffered or would have suffered had they lived long enough. It is not so easy to ascertain how many attained to "cancer-ages" as it is to learn how many relatives, e.g., brothers and sisters, were born. It must be confessed that a segregation of families into those relatively liable to, and relatively exempt from, cancer has not as yet been satisfactorily attained, although attempted repeatedly. It is not difficult to collect a number of family histories of those who have suffered from cancer, but it is difficult to the point of impossibility to make these histories complete genealogical trees for three, and even for two, generations. What is of even more importance is the difficulty[2] of bringing the data for such limited members of families into relation with the population generally in a way which may justify a comparison between them, so as to be sure that cancer is really more frequent in some families than in others.

For the determination of the importance of heredity we are concerned with the comparison of the frequency of cancer in parents and children. It is immaterial whether we reason from groups of cancerous and non-cancerous children to their parents, or from cancerous and non-cancerous parents to their children. What we are seeking for is the evidence of the hereditary *transmission* of cancer and the relation between its occurrence in parents and children will be revealed as well by the one method as by the other if the data can be obtained. The evidence we have to rely on is, I am afraid, of a very imperfect kind and of the following nature. It may be considered under four heads corresponding to a grouping of the data obtained: (*a*) where no history of cancer was obtainable and the family history not properly recorded; (*b*) where no history of cancer was obtainable but the family history was recorded; (*c*) and (*d*) where a history of cancer was obtainable and the family history fully or imperfectly recorded.

In the two years 1906 and 1907 reports on 2932 patients suffering from malignant new growths in which the clinical diagnosis had been confirmed by microscopical examination were received by the Imperial Cancer Research Fund.

I. Of these 2932 cases the space assigned to records of the family history was not filled in at all, contained a record stating that the family history was doubtful as regards the occurrence of cancer in "ascendants" or "collaterals," or showed the family history had obviously been carelessly inquired into in 2263 cases. Therefore, in three out of every four cases there was either no knowledge on the part of the patient that near relations had suffered from cancer or carelessness on the part of the recorder of the incidents in the family history of the patient. It is *a priori* quite intelligible, as many investigators have stated, that the class from which hospital patients are drawn are ignorant of the causes of death and even of the life-history of their ascendants and collaterals, the exigencies of existence causing them to fall out of touch with the family. The fact that no reliable statement was obtainable for 2263 out of a total of 2932 cases must be in the main referred to these circumstances, or to the circumstance that cancer as a matter of fact had not occurred in the family. The weight which will be attached to these alternatives will doubtless depend upon the bias of the inquirer. Those supplying the information to the Imperial Cancer Research Fund may be looked upon as reliable and unbiased observers and their inability to supply information was in all probability the consequence of insurmountable difficulties in attempting to elicit positive information. Nevertheless, the large proportion of patients corresponding to 4526 parents and a much higher but unknown number of collaterals in whom no evidence of cancer was obtainable is very striking. Even allowing for the imperfections of the records, these figures are an example of the kind of evidence which is advanced to show the occurrence of few cases of cancer in a large number of relatives. There are no data which permit us to deny that the 4526 parents of these 2263 cancer patients actually suffered from cancer in the same proportions as the general population—viz., 1 in 11 men and 1 in 8 women. The same may be said for the collaterals. The fact that no statement was made does not justify the assumption that the incidence of cancer in the parents of these patients was less than in the general population, and we must therefore restrict our reasoning to those family histories in which definite statements as to the occurrence or absence of cancer were made.

II. There remain 669 cases to be considered. It was definitely recorded for 358 patients, the number of whose brothers and sisters was also stated, and who, judging by this fact, were well informed of their family histories that no other case of cancer had occurred in the family. These 358 cases of cancer are therefore to be regarded as sporadic cases without heredity; 358 cases without family taint out of a total of 699 families is such a high proportion that if such records are to be relied upon a family taint evidently is not the sole foundation upon which cancer develops.

III.–IV.—Cancer was recorded in one to four blood relatives of the remaining 311 cancer patients. Thus, out of 669 patients suffering from cancer whose family histories were obtainable cancer is recorded as having occurred in the relatives of 311—i.e., in 50 per cent. But as we have already seen the mortality from cancer is so great that in one of two cases of cancer either a parent or grandparent will have died from cancer without assuming hereditary predisposition. Hence the use made of such records to prove the occurrence of a large number of cases of cancer in a selected number of families is not warranted.

The 311 patients with a family history of cancer had 359 cancerous relatives. The father was attacked 58 times and the mother 114 times, or 1 in 5·4 for fathers and 1 in 2·7 for mothers. This appears to be a very much higher rate than occurs in the general population for males and females above 35 years of age. A crude calculation of this kind appears to be the usual method by which the figures for family histories of cancer are utilised to bring out evidence of heredity. In it no account is taken of the families of the 358 cancer patients for whom complete histories were obtained, showing no occurrence of cancer in relatives. If it is, however, not justifiable to exclude them, since doing so appears to beg the whole question, then the 58 cancerous fathers and the 114 cancerous mothers occurred among the 669 male and 669 female parents of cancerous children, or 1 in 11·5 of the fathers and 1 in 6 of the mothers suffered from cancer. These proportions are as near those obtaining for the general population dying from all causes as can be expected from such crude data.

No detailed reference has been made to the numbers of additional cases of cancer recorded in the brothers and sisters of cancer patients, the reason being the very good one that no approximate estimate of their respective ages at death and no comparison with the general population is possible. It gives us no information whatsoever to find that 15 deaths occurred in 607 brothers born and 27 deaths in 596 sisters born, and we are no further if we take the brothers and sisters only of those patients who died over 50 years of age. However, Weinberg has been able to make an approximate calculation for cancer patients in the population of Stuttgart. In order to obtain a basis for comparison he ascertained how many deaths from cancer had occurred in the family of the deceased and also how many deaths from cancer had occurred in the families of their husbands and wives. According to data thus obtained there died from cancer of 100 relatives:—

	Of the deceased.	Of their husbands and wives.
Parents	6·6 per cent.	5·9 per cent.
Brothers and sisters	3·9 ,,	3·1 ,,

And he concludes that heredity does not play a dominant part. We have still to consider the importance attaching to

[2] The difficulty is less when the question put is that of contrasting parents with the generation sprung from them, and with certain reservations it may be overcome in this case; but it is a counsel of perfection to assert that the question put should be a comparison between the frequency of cancer in the general population and in the total number of relatives of families with a cancerous history. The one is a statement of a practicable, the other of an impracticable, inquiry. The two statements, however, really involve one and the same problem.

those family histories with an exceptionally high incidence of cancer, or where, as pointed out by Butlin, the disease appears only on one side of the family, as if introduced by some grandparent or parent; e.g., such family histories as the following, kindly supplied to me by Mr. Edward Jessop, are certainly very suggestive, but unfortunately the information as to ascendants and collaterals gives out just where it would prove of value. A man, one of a family of nine, died from cancer of the liver, the others being all alive and well. The patient's mother was one of a family of 13, seven of whom (four males and three females) died from cancer. Two died from cancer of the bladder, two from cancer of the liver, and one each from cancer of the throat, uterus, and breast. In another family of nine children five died from cancer (four males and one female). The four males all died from abdominal growths (cæcum). The female died from cancer of the uterus. The mother and the mother's brother also died from cancer. The father died from phthisis. The son of the eighth son recently died from cancer of the bowel at the age of 28 years.

Family histories of this kind are, however, rare in proportion to the number of individuals attacked and they are mainly of interest as showing that if cancer be transmissible by heredity then transmission takes place both through the male and the female without anything corresponding to what is known for hæmophilia and colour blindness. These histories are so infrequent that they cause no surprise when the table of the relative frequency of cancer in the general population referred to above is considered, for did these forms of family history imply hereditary transmission then we should be able with ease to obtain tables of 100 families in which the figures for no deaths, one, two, three, or more were the inverse of what they are in the population, but this is not the case. The isolated instances recorded in the literature serve only to show how rare this phenomenon really is. When recorded it is more than probably to be looked upon as what would be expected to happen in the case of so frequent a cause of death as cancer, from a consideration of the distribution theoretically calculated according to the law of probabilities. To sum up the inferences which may be drawn from the crude statistical data in man there is nothing which one would be justified in submitting to the biometrician for nearer analysis. There is, in short, no evidence of cancer arising as a transmissible variation. It seems, then, that cancer is probably always acquired.

Turning to the experimental investigation of cancer in animals, alleged epidemics have often been recorded in them, especially for mice and rats housed together in small cages. Satisfactory proof that these aggregations of cases were due to infection has not been furnished and the alternative explanation that they arise as the result of in-breeding cancerous stock has naturally suggested itself. Our very detailed observations on many ten thousands of mice have not revealed in our laboratory anything which we would call an epidemic. When, however, we take into consideration the manner in which cases of carcinoma mammæ have been sent to us by breeders, we find the same kind of evidence as that which has led observers in France, America, and Germany to assert that epidemics of cancer occur in breeding establishments. We may illustrate this kind of evidence by the numbers of tumour mice sent in by four of the breeders who supply us with mice under a guarantee that no fresh stock has been introduced. From Jan. 1st, 1906, to Oct. 31st, 1907, Mr. A. sent us 10 cases, Mr. B. 6 cases, Mr. C. 35 cases, and Mr. D. 18 cases of carcinoma of the mamma. These figures, which are more remarkable than any others yet published, are no evidence that there was an endemic or epidemic occurrence of cancer in the breeding cages of Mr. C. or Mr. D. The proportion of mice supplied to us in the same period to cases of cancer were as follows:—

	A.	B.	C.	D.
Tumour mice	10	6	35	18
Total mice	1302	1547	9698	11,842

The number of tumours occurring in these stocks of mice has been determined solely by the number of mice of "cancer-age" under observation. This is brought out particularly clearly in the difference between the age constitution of the stock of Mr. C. and Mr. D., since the stock of the latter contains constantly a much higher proportion of young animals, and he supplies us with most of our young mice. Further, if we note the dates on which tumours are sent to us and arrange them in columns we find that the crops of tumours coincide with the aging of groups of mice. Thus those apparent aggregations of cases, wrongly called epidemics by too enthusiastic advocates of a parasitic origin for cancer, also give no indication of haphazard in-breeding leading to a preponderance of cases of cancer of the mamma. The incidence of the disease for mice continues to obey the laws of age and sex distribution even where in-breeding is proceeding haphazard.

We have therefore devoted great attention to systematic breeding experiments, of which the starting-point has been not merely mice of so-called cancerous stock but mice which had also *actually suffered* from cancer. Thus the objection has been met of those who might argue that unless the disease had been present in the parent there was no opportunity for its transmission. The question of heredity of cancer of the mamma, or of a predisposition to it, is now in a fair way to final settlement. The mouse has the great advantage that its life is short, and many successive generations can be accurately observed and age, dates of birth and death, parentage, cause of death, and post-mortem examination fully recorded. In addition a comparison with an average sample of the mouse population is possible. The surgical removal of spontaneously occurring mammary tumours of which the clinical course and the pathological examination leave no doubt whatsoever that the tumours were malignant epithelial new growths, has enabled us to prolong the life of many mice and to breed from them. Breeding from such elderly mice is not an easy matter and much patience has been necessary. By successively crossing other spontaneously affected animals with the offspring of cancerous parents, strains are being obtained in which the cancerous heredity is $\frac{1}{2}$, $\frac{3}{4}$, or $\frac{15}{16}$, and even higher. The concentration of a hypothetical hereditary factor in a *known* amount and in large numbers of animals of *known* age should in the course of a few more years definitely settle whether there is a family or only an individual liability to the disease. As yet we have obtained only a few cases of carcinoma of the mamma and no cases in other organs. Thus far there is no evidence that the liability to carcinoma has been enhanced by systematic in-breeding. I do not wish to anticipate the results of our observations, which are still continuing, but we have not as yet obtained even an indication that cancer is inherited. It appears to be very doubtful whether there is transmitted even a power of acquiring the cancerous modification under excitation; and it is not impossible that cancer may be really a late modification of healthy tissue acquired *de novo* for each individual and in which the bogey of inherited predisposition—the dying echo of ancient constitutional conceptions of cancer as a blood disease—plays no part whatsoever.

The question will be asked: If experiment does not as yet support the conception of an inherited predisposition, why does cancer arise in one individual and not in another who has been subject to the same irritant on the same region of the body? One of the most important results of experiment has been the absolute demonstration of the truth of the belief to which I suppose we all subscribe nowadays, that cancer is primarily circumscribed. The fact that occasionally there may be more than one primary focus in the same individual or that a single focus may comprise a number of centres does not fundamentally affect this view. Another important result of experiment has been the demonstration that the conditions of origin are fundamentally distinct from the conditions of mere growth into a tumour, and a third the proof that the soil provided by a mouse or a rat can be experimentally modified in two directions. It can be rendered absolutely unsuitable or more than normally suitable for the growth of transplantable carcinomata and sarcomata. It has been amply shown that the tame mice of England differ in their susceptibility to transplantation from those of France, Germany, or Denmark, and that German mice may be modified—e.g., by prolonged sojourn in Norway, and English mice by prolonged sojourn in Germany. Another form of constitutional influence which is of moment, at any rate in the case of some transplantable tumours, is that the presence of a primary tumour can effect a secondary modification favourable to dissemination and metastasis formation. Observations have also been recorded, but are as yet unconfirmed, that the histological structure of a tumour can be modified by the influence of the "soil."

great variations in accordance with the frequency of cancer in their progenitors above and below the average given in the preceding table, the division of the population into groups with and without a family susceptibility would be practicable and the investigation of possible hereditary factors feasible in the case of man.

The segregation of the general population into such groups is, however, rendered very difficult, because the great frequency of cancer as a cause of death in adult life discounts very largely any value which might otherwise attach to a succession of cases or to its mere appearance and reappearance in a family as evidence of heredity; the peculiarities of its age-incidence make it difficult to know what proportion of relatives have suffered or would have suffered had they lived long enough. It is not so easy to ascertain how many attained to "cancer-ages" as it is to learn how many relatives, e.g., brothers and sisters, were born. It must be confessed that a segregation of families into those relatively liable to, and relatively exempt from, cancer has not as yet been satisfactorily attained, although attempted repeatedly. It is not difficult to collect a number of family histories of those who have suffered from cancer, but it is difficult to the point of impossibility to make these histories complete genealogical trees for three, and even for two, generations. What is of even more importance is the difficulty[2] of bringing the data for such limited members of families into relation with the population generally in a way which may justify a comparison between them, so as to be sure that cancer is really more frequent in some families than in others.

For the determination of the importance of heredity we are concerned with the comparison of the frequency of cancer in parents and children. It is immaterial whether we reason from groups of cancerous and non-cancerous children to their parents, or from cancerous and non-cancerous parents to their children. What we are seeking for is the evidence of the hereditary *transmission* of cancer and the relation between its occurrence in parents and children will be revealed as well by the one method as by the other if the data can be obtained. The evidence we have to rely on is, I am afraid, of a very imperfect kind and of the following nature. It may be considered under four heads corresponding to a grouping of the data obtained: (*a*) where no history of cancer was obtainable and the family history not properly recorded; (*b*) where no history of cancer was obtainable but the family history was recorded; (*c*) and (*d*) where a history of cancer was obtainable and the family history fully or imperfectly recorded.

In the two years 1906 and 1907 reports on 2932 patients suffering from malignant new growths in which the clinical diagnosis had been confirmed by microscopical examination were received by the Imperial Cancer Research Fund.

I. Of these 2932 cases the space assigned to records of the family history was not filled in at all, contained a record stating that the family history was doubtful as regards the occurrence of cancer in "ascendants" or "collaterals," or showed the family history had obviously been carelessly inquired into in 2263 cases. Therefore, in three out of every four cases there was either no knowledge on the part of the patient that near relations had suffered from cancer or carelessness on the part of the recorder of the incidents in the family history of the patient. It is *a priori* quite intelligible, as many investigators have stated, that the class from which hospital patients are drawn are ignorant of the causes of death and even of the life-history of their ascendants and collaterals, the exigencies of existence causing them to fall out of touch with the family. The fact that no reliable statement was obtainable for 2263 out of a total of 2932 cases must be in the main referred to these circumstances, or to the circumstance that cancer as a matter of fact had not occurred in the family. The weight which will be attached to these alternatives will doubtless depend upon the bias of the inquirer. Those supplying the information to the Imperial Cancer Research Fund may be looked upon as reliable and unbiased observers and their inability to supply information was in all probability the consequence of insurmountable difficulties in attempting to elicit positive information. Nevertheless, the large proportion of patients corresponding to 4526 parents and a much higher but unknown number of collaterals in whom no evidence of cancer was obtainable is very striking. Even allowing for the imperfections of the records, these figures are an example of the kind of evidence which is advanced to show the occurrence of few cases of cancer in a large number of relatives. There are no data which permit us to deny that the 4526 parents of these 2263 cancer patients actually suffered from cancer in the same proportions as the general population—viz., 1 in 11 men and 1 in 8 women. The same may be said for the collaterals. The fact that no statement was made does not justify the assumption that the incidence of cancer in the parents of these patients was less than in the general population, and we must therefore restrict our reasoning to those family histories in which definite statements as to the occurrence or absence of cancer were made.

II. There remain 669 cases to be considered. It was definitely recorded for 358 patients, the number of whose brothers and sisters was also stated, and who, judging by this fact, were well informed of their family histories that no other case of cancer had occurred in the family. These 358 cases of cancer are therefore to be regarded as sporadic cases without heredity; 358 cases without family taint out of a total of 699 families is such a high proportion that if such records are to be relied upon a family taint evidently is not the sole foundation upon which cancer develops.

III.–IV.—Cancer was recorded in one to four blood relatives of the remaining 311 cancer patients. Thus, out of 669 patients suffering from cancer whose family histories were obtainable cancer is recorded as having occurred in the relatives of 311—i.e., in 50 per cent. But as we have already seen the mortality from cancer is so great that in one of two cases of cancer either a parent or grandparent will have died from cancer without assuming hereditary predisposition. Hence the use made of such records to prove the occurrence of a large number of cases of cancer in a selected number of families is not warranted.

The 311 patients with a family history of cancer had 359 cancerous relatives. The father was attacked 58 times and the mother 114 times, or 1 in 5·4 for fathers and 1 in 2·7 for mothers. This appears to be a very much higher rate than occurs in the general population for males and females above 35 years of age. A crude calculation of this kind appears to be the usual method by which the figures for family histories of cancer are utilised to bring out evidence of heredity. In it no account is taken of the families of the 358 cancer patients for whom complete histories were obtained, showing no occurrence of cancer in relatives. If it is, however, not justifiable to exclude them, since doing so appears to beg the whole question, then the 58 cancerous fathers and the 114 cancerous mothers occurred among the 669 male and 669 female parents of cancerous children, or 1 in 11·5 of the fathers and 1 in 6 of the mothers suffered from cancer. These proportions are as near those obtaining for the general population dying from all causes as can be expected from such crude data.

No detailed reference has been made to the numbers of additional cases of cancer recorded in the brothers and sisters of cancer patients, the reason being the very good one that no approximate estimate of their respective ages at death and no comparison with the general population is possible. It gives us no information whatsoever to find that 15 deaths occurred in 607 brothers born and 27 deaths in 596 sisters born, and we are no further if we take the brothers and sisters only of those patients who died over 50 years of age. However, Weinberg has been able to make an approximate calculation for cancer patients in the population of Stuttgart. In order to obtain a basis for comparison he ascertained how many deaths from cancer had occurred in the family of the deceased and also how many deaths from cancer had occurred in the families of their husbands and wives. According to data thus obtained there died from cancer of 100 relatives:—

	Of the deceased.	Of their husbands and wives.
Parents	6·6 per cent.	5·9 per cent.
Brothers and sisters	3·9 ,,	3·1 ,,

And he concludes that heredity does not play a dominant part. We have still to consider the importance attaching to

[2] The difficulty is less when the question put is that of contrasting parents with the generation sprung from them, and with certain reservations it may be overcome in this case; but it is a counsel of perfection to assert that the question put should be a comparison between the frequency of cancer in the general population and in the total number of relatives of families with a cancerous history. The one is a statement of a practicable, the other of an impracticable, inquiry. The two statements, however, really involve one and the same problem.

those family histories with an exceptionally high incidence of cancer, or where, as pointed out by Butlin, the disease appears only on one side of the family, as if introduced by some grandparent or parent; e.g., such family histories as the following, kindly supplied to me by Mr. Edward Jessop, are certainly very suggestive, but unfortunately the information as to ascendants and collaterals gives out just where it would prove of value. A man, one of a family of nine, died from cancer of the liver, the others being all alive and well. The patient's mother was one of a family of 13, seven of whom (four males and three females) died from cancer. Two died from cancer of the bladder, two from cancer of the liver, and one each from cancer of the throat, uterus, and breast. In another family of nine children five died from cancer (four males and one female). The four males all died from abdominal growths (cæcum). The female died from cancer of the uterus. The mother and the mother's brother also died from cancer. The father died from phthisis. The son of the eighth son recently died from cancer of the bowel at the age of 28 years.

Family histories of this kind are, however, rare in proportion to the number of individuals attacked and they are mainly of interest as showing that if cancer be transmissible by heredity then transmission takes place both through the male and the female without anything corresponding to what is known for hæmophilia and colour blindness. These histories are so infrequent that they cause no surprise when the table of the relative frequency of cancer in the general population referred to above is considered, for did these forms of family history imply hereditary transmission then we should be able with ease to obtain tables of 100 families in which the figures for no deaths, one, two, three, or more were the inverse of what they are in the population, but this is not the case. The isolated instances recorded in the literature serve only to show how rare this phenomenon really is. When recorded it is more than probably to be looked upon as what would be expected to happen in the case of so frequent a cause of death as cancer, from a consideration of the distribution theoretically calculated according to the law of probabilities. To sum up the inferences which may be drawn from the crude statistical data in man there is nothing which one would be justified in submitting to the biometrician for nearer analysis. There is, in short, no evidence of cancer arising as a transmissible variation. It seems, then, that cancer is probably always acquired.

Turning to the experimental investigation of cancer in animals, alleged epidemics have often been recorded in them, especially for mice and rats housed together in small cages. Satisfactory proof that these aggregations of cases were due to infection has not been furnished and the alternative explanation that they arise as the result of in-breeding cancerous stock has naturally suggested itself. Our very detailed observations on many ten thousands of mice have not revealed in our laboratory anything which we would call an epidemic. When, however, we take into consideration the manner in which cases of carcinoma mammæ have been sent to us by breeders, we find the same kind of evidence as that which has led observers in France, America, and Germany to assert that epidemics of cancer occur in breeding establishments. We may illustrate this kind of evidence by the numbers of tumour mice sent in by four of the breeders who supply us with mice under a guarantee that no fresh stock has been introduced. From Jan. 1st, 1906, to Oct. 31st, 1907, Mr. A. sent us 10 cases, Mr. B. 6 cases, Mr. C. 35 cases, and Mr. D. 18 cases of carcinoma of the mamma. These figures, which are more remarkable than any others yet published, are no evidence that there was an endemic or epidemic occurrence of cancer in the breeding cages of Mr. C. or Mr. D. The proportion of mice supplied to us in the same period to cases of cancer were as follows:—

	A.	B.	C.	D.
Tumour mice	10	6	35	18
	1302	1547	9698	11,842
Total mice				

The number of tumours occurring in these stocks of mice has been determined solely by the number of mice of "cancer-age" under observation. This is brought out particularly clearly in the difference between the age constitution of the stock of Mr. C. and Mr. D., since the stock of the latter contains constantly a much higher proportion of young animals, and he supplies us with most of our young mice. Further, if we note the dates on which tumours are sent to us and arrange them in columns we find that the crops of tumours coincide with the aging of groups of mice. Thus those apparent aggregations of cases, wrongly called epidemics by too enthusiastic advocates of a parasitic origin for cancer, also give no indication of haphazard in-breeding leading to a preponderance of cases of cancer of the mamma. The incidence of the disease for mice continues to obey the laws of age and sex distribution even where in-breeding is proceeding haphazard.

We have therefore devoted great attention to systematic breeding experiments, of which the starting-point has been not merely mice of so-called cancerous stock but mice which had also *actually suffered* from cancer. Thus the objection has been met of those who might argue that unless the disease had been present in the parent there was no opportunity for its transmission. The question of heredity of cancer of the mamma, or of a predisposition to it, is now in a fair way to final settlement. The mouse has the great advantage that its life is short, and many successive generations can be accurately observed and age, dates of birth and death, parentage, cause of death, and post-mortem examination fully recorded. In addition a comparison with an average sample of the mouse population is possible. The surgical removal of spontaneously occurring mammary tumours of which the clinical course and the pathological examination leave no doubt whatsoever that the tumours were malignant epithelial new growths, has enabled us to prolong the life of many mice and to breed from them. Breeding from such elderly mice is not an easy matter and much patience has been necessary. By successively crossing other spontaneously affected animals with the offspring of cancerous parents, strains are being obtained in which the cancerous heredity is $\frac{1}{2}$, $\frac{3}{4}$, or $\frac{7}{8}$, and even higher. The concentration of a hypothetical hereditary factor in a *known* amount and in large numbers of animals of *known* age should in the course of a few more years definitely settle whether there is a family or only an individual liability to the disease. As yet we have obtained only a few cases of carcinoma of the mamma and no cases in other organs. Thus far there is no evidence that the liability to carcinoma has been enhanced by systematic in-breeding. I do not wish to anticipate the results of our observations, which are still continuing, but we have not as yet obtained even an indication that cancer is inherited. It appears to be very doubtful whether there is transmitted even a power of acquiring the cancerous modification under excitation; and it is not impossible that cancer may be really a late modification of healthy tissue acquired *de novo* for each individual and in which the bogey of inherited predisposition—the dying echo of ancient constitutional conceptions of cancer as a blood disease—plays no part whatsoever.

The question will be asked: If experiment does not as yet support the conception of an inherited predisposition, why does cancer arise in one individual and not in another who has been subject to the same irritant on the same region of the body? One of the most important results of experiment has been the absolute demonstration of the truth of the belief to which I suppose we all subscribe nowadays, that cancer is primarily circumscribed. The fact that occasionally there may be more than one primary focus in the same individual or that a single focus may comprise a number of centres does not fundamentally affect this view. Another important result of experiment has been the demonstration that the conditions of origin are fundamentally distinct from the conditions of mere growth into a tumour, and a third the proof that the soil provided by a mouse or a rat can be experimentally modified in two directions. It can be rendered absolutely unsuitable or more than normally suitable for the growth of transplantable carcinomata and sarcomata. It has been amply shown that the tame mice of England differ in their susceptibility to transplantation from those of France, Germany, or Denmark, and that German mice may be modified—e.g., by prolonged sojourn in Norway, and English mice by prolonged sojourn in Germany. Another form of constitutional influence which is of moment, at any rate in the case of some transplantable tumours, is that the presence of a primary tumour can effect a secondary modification favourable to dissemination and metastasis formation. Observations have also been recorded, but are as yet unconfirmed, that the histological structure of a tumour can be modified by the influence of the "soil."

There are, therefore, constitutional conditions which are favourable, and others which are unfavourable, to the growth of cancer, and they can be induced experimentally at will. An analogous relationship may subsist between the subject of spontaneous cancer and the tumour—e.g., in man. Then the consequences of the circumscribed primary cancerous change would depend upon the condition of the "soil" in which it is taking place, from causes either within or without the body.

In conclusion, with nothing but negative evidence of the part played by inherited constitutional conditions before us, and with positive evidence of the important part acquired constitutional conditions can play in furthering the growth, perhaps the development, of cancer, we shall more profitably spend our time if we frankly seek to ascertain how they are acquired, than if we continue to preach the doctrine that they are inherited and that it is hopeless to contend against them.

THE INFLUENCE OF HEREDITY UPON TUBERCULOSIS.[1]

BY ARTHUR LATHAM, M.D. OXON., F.R.C.P. LOND.,
PHYSICIAN TO ST. GEORGE'S HOSPITAL AND SENIOR ASSISTANT PHYSICIAN TO THE HOSPITAL FOR DISEASES OF THE CHEST, BROMPTON.

OUR knowledge on the influence of heredity upon tuberculosis is not precise. We can do little more than state certain more or less well-established facts and suggest possibilities. We know that the transmission of the tubercle bacillus from parent to child in utero is more common than was at one time supposed, but that it is so rare that it is a negligible factor. Certainly the number of instances in which there is clinical evidence of tuberculosis at birth is small. Thus, Schleuter in 1902 only succeeded in collecting 12 well-authenticated cases in man and 70 in animals. The theory that the children of tuberculous parents are born with tubercle bacilli within their bodies and that these remain latent for years is supported by insufficient evidence. It is in all probability true that several years may elapse between the date of infection and the appearance of definite clinical signs or symptoms, but it is impossible to prove that such infection took place before birth and not afterwards. We find that in the great majority of instances the organs of fœtuses born of tuberculous mothers give negative results when inoculated into guinea-pigs. If we neglect the rare instances of the hereditary transmission of the germ, what view are we take of the theory that the soil is transmitted, that there is a hereditary transmission of predisposition, constitution, or diathesis from tuberculous ancestors to their descendants? Modern knowledge has made such a theory less and less probable, for it is becoming clearer that the dominating factor in the incidence of tuberculosis is the opportunity for infection. We know of no instance of a naturally refractory animal or of an artificially immunised animal which is proof against infection by a sufficiently large dose of a sufficiently virulent strain of tubercle bacilli. Clinical experience leads us to the same conclusion in man. A general review of our knowledge shows that the greater the opportunities for infection the greater are the incidence and mortality of tuberculosis. It is difficult to give clean evidence of this, for the effect of environment cannot be wholly eliminated. Environment, however, merely acts by lowering the vitality and so makes a smaller dose of bacilli effective and diminishes the immunising capacity of the individual. The differing incidence of tuberculosis in different trades and in clean houses as against similar but dirty houses is suggestive of the part played by infection. So, too, is Cornet's investigation upon the death-rate from tuberculosis among certain religious orders devoted to nursing. In a review of 38 cloisters embracing the average number of 4028 residents there were 2099 deaths in 25 years. Of these no less than 63 per cent. were due to tuberculosis. Conversely we know that by limiting the opportunities for infection we can practically limit the incidence of the disease. Bang's classical experiment proves this. This observer isolated the calves born in a tuberculous herd and in this way was able to establish a herd which was free from tuberculosis. The same thing is shown by the effect produced by active preventive measures in man. Of recent years more active preventive measures have been adopted in New York City than in any other great town. As a result there has been a more rapid fall in the tuberculous death-rate in New York than in any great city in the world; and what is of interest to this discussion, there has been a decrease of 40 per cent. in the death-rate in children under 15 from pulmonary tuberculosis and tuberculous meningitis during the last ten years, notwithstanding the extraordinary difficulties—chiefly due to the immigrants—present in New York.

We know that infection can always be effective, no matter what the man's diathesis is, under certain circumstances, and we also know that in animals and in man the capacity for resistance differs in different individuals. Whether this difference of capacity for resistance depends on inherited characteristics or not in some instances, we know that whatever the resistance of a man may be to start with, it can be profoundly modified by various agencies. It is an established fact that a high mortality from tuberculosis in any community is always associated with imperfect sanitary conditions. Again, anything which leads to malnutrition leads to a lowered resistance and in consequence an increased mortality from tuberculosis. This is shown by the increase of tuberculosis which is associated with widespread unemployment and with overcrowded poor districts. Chronic diseases which are characterised by loss of nutritive capacity are stated to be associated with an excessive percentage of tuberculosis. Thus the incidence of tuberculosis is excessive in the insane, and the death-rate from pulmonary tuberculosis in young persons suffering from diabetes is stated to be greater than it is in non-diabetic persons of the same age. The influence of environment or disease would appear to act chiefly by lessening the resistance to infection and to be perhaps chiefly important in its effect upon the course of the disease. Environment in its most comprehensive term lessens the resistance to the disease, and hence it causes a greater number of persons to become victims of the ubiquitous infection. More important still, it reduces the immunising capacity of these victims, and hence persons who under better conditions would have acquired a partial immunity and so have been cured of the disease fail to get well, and by acting as carriers of the infective material lead to an increased incidence of tuberculosis. The influence of environment on the course of the disease was well demonstrated by Trudeau who found that rabbits inoculated with tuberculosis rapidly died if they were kept in a dark damp place, whilst others inoculated in the same way but allowed to run wild usually recovered. Similarly it is stated that efficient drainage of the soil at Salisbury, Ely, and Rugby was at once followed by a reduction in the mortality of pulmonary tuberculosis of 49 per cent., 47 per cent., and 43 per cent. respectively.

The parts played by infection and by environment are important when we come to the question whether persons who suffer from tuberculosis transmit a predisposition to this disease, because it is impossible to say whether these two factors have been given their true value in the various investigations made on this subject. Formerly the medical profession were convinced that a tuberculous taint was transmitted from one generation to another. At the present time our opinions are less dogmatic. If we look at infective disease as a whole we find little evidence on which to base the opinion that predisposition to infective disease is transmitted from parent to child. In syphilis it is true that the disease is transmitted in certain instances to the next generation. Such transmission is less frequent according as the parent has been adequately treated—that is, it varies directly with the degree of immunity acquired by the parent. Further, just as congenital tuberculosis is due to the direct transmission of the tubercle bacillus, congenital syphilis is due to the direct transmission of the spirochæta pallida. Lastly, inherited syphilis in the third generation is not an accepted fact. Those who hold that there is a hereditary predisposition to tuberculosis base their opinion largely, if not wholly, on statistics which purport to show the incidence of the disease—and chiefly of only one clinical form of the disease—in families of a tainted stock as compared with its incidence in families of an untainted stock. Several objections apart from the difficulty of excluding the influence of greater opportunities for infection and the

[1] A paper read before the Fellows of the Royal Society of Medicine on Nov. 18th at the adjourned discussion on Heredity with Special Reference to Cancer, Tuberculosis, and Disease of the Nervous System.

influence of environment may be brought forward to show that such statistics are probably misleading.

1. The statistics are nearly all based on comparatively small figures. It is probably owing to this fact that the estimates given by different authors vary greatly. Thus the estimates of the number of persons who have a hereditary predisposition to tuberculosis are variously given as being from 10 per cent. to 80 per cent. of the general community.

2. The statistics are based on answers obtained from individuals as to the cause of death or the occurrence of tuberculosis in their ancestors and relatives. In most investigations the answers given by uneducated people are accepted with little reserve. Hospital experience has shown us that such data are quite unreliable in the lower middle and poorer classes. An insurance experience which brings nearly 4000 family histories annually before my notice has convinced me that even intelligent members of the upper classes are strangely ignorant of the disease history of their families and that their statements as to the cause of death are frequently unsubstantiated by further investigation. Most medical men will agree with me when I suggest that statistics as to the incidence of tuberculosis which are based on the statements of relatives are absolutely unreliable.

3. Most of the family histories collected on this hearsay evidence are incomplete. In nearly all investigations children or others whose life-history is not at an end are included. In view of the fact that there is good clinical evidence to suggest that infection may occur and yet not give rise to the clinical symptoms of the disease for some years, it is clear that if we are to have a complete picture we must have completed family histories.

4. The statistics are all confined to the influence of one example of tuberculosis—namely, the pulmonary form—and in most instances all reference to the occurrence of tuberculosis of the glands, bones, joints, testicles, peritoneum, &c., is omitted. Recent research has shown that the organ or tissue which may happen to be infected is largely a matter of chance, which is determined chiefly by the portal of infection and partly by the age of the affected person. The differences due to the age of the affected person would appear to be dependent in part upon the distribution and arrangement of the lymphatic system at various periods of life. The transmission of any defective resistance to tuberculosis is probably independent of the fact whether we are dealing with pulmonary or bone tuberculosis, for it is no uncommon thing to find three or four different forms of tuberculosis in one and the same family. It has become clear that if we are to have clean evidence on the subject of the transmission of a hereditary predisposition in this disease, we must not confine our attention to examples of pulmonary tuberculosis but must embrace all forms of tuberculosis in our inquiries, more especially when we remember that all the various forms are capable of producing, and eventually often do produce, the pulmonary form in their host.

5. The statistical investigations are confined to tuberculosis which has been associated with definite clinical signs, and no differentiation has been made between persons who have become cured, and have therefore acquired a partial immunity, and those who have been unable to make any effective resistance to the disease. Further, all reference has been omitted to cases of pulmonary tuberculosis which have become spontaneously healed (cases, that is, in which a partial immunity has been acquired) without showing any evidence of the disease during life. How frequently tuberculosis undergoes a spontaneous cure, and in a large proportion of cases without ever having been detected during life, is shown by pathological records. It is generally allowed that there is evidence at death of tuberculosis having occurred in at least from 30 to 50 per cent. of the community, and that the proportion increases with age, that is as the risks of infection increase. Some authors go further and many of us will be inclined to agree with them; thus Naegeli found evidence of tuberculosis in 97 per cent. of 500 consecutive necropsies, and Osler has stated that if a systematic laboratory investigation is made tuberculous lesions are found practically in 100 per cent. of adult bodies. It is highly probable that persons who have acquired a partial immunity and have overcome the infection, and persons who are unable to acquire any real immunity or to offer real resistance to the disease have different effects on their descendants. It is possible that the one might represent the long plants investigated by Mendel and the other the short plants. No allowance for this possibility has been made in any investigation I have read.

It is clear to my mind that statistics which are based largely on old wives' recollections, on uncompleted family records, on a selected form of the disease, and in which no reference is made to the fact whether any immunity has been acquired or not, cannot give us a scientific insight into the question of a hereditary predisposition. It is also clear that any statistical investigation, if it is to be scientific and not futile, must be based on adequate post-mortem records of the grandparents, parents, and every member of the family.

If we consider these statistics which are based on family histories, and to the value of which I have brought forward the above objections, what do we find? Dr. F. C. Shrubsall, who has investigated the records of the Brompton Hospital, will tell you that it is difficult to arrive at any definite conclusions. Professor Karl Pearson's investigation, which is perhaps the most recent and careful one, but which has many of the faults to which I have alluded, is based on between 200 and 300 "fairly complete" family histories. Professor Pearson holds that his figures show that 50 per cent. of the offspring of tuberculous parents become affected with tuberculosis and adds that he is inclined to think that the theory of infection does not account for the facts and that the constitution or diathesis means almost everything for the individual whose life cannot be spent in self-protection. If we allow that 50 per cent. of the offspring of those suffering from pulmonary tuberculosis eventually suffer from this form of the disease owing to their inherited want of resistance, we should, I think, expect a progressive increase in the incidence of the disease and a progressive increase in the mortality. Now what do we find? Pathological evidence shows that most of us have tuberculosis at some time, but that most of us have sufficient resistance power to overcome the infection. In spite of the fact that all of us are infected, the statistics of this country show that each decade we are more able to resist the disease. The Registrar-General's statistics show that the total annual deaths from pulmonary consumption have fallen from 59,035 in 1838 to 39,746 in 1906, in spite of the enormous increase of the population during that period, and the death-rate per 10,000 living has been reduced during that period from 38·9 to 11·5. The factors of immigration and emigration cannot have affected these figures, for tuberculosis is an almost universal disease and the incidence in England and Wales is less than that of most countries. It might be that this enormous decline depended on the comparatively early death-rate of consumptives and their lessened capacity for producing children, but we find that from 1851–60 to the present time the age of maximum mortality from pulmonary tuberculosis has risen in males from between 20 and 25 to between 45 and 55 and in females from between 25 and 35 to between 35 and 45, and that therefore the capacity for consumptives to produce families and to transmit the predisposition, if it exists, has been very largely increased.

It is difficult to correlate these facts which are based on large and probably fairly correct figures with the assumption that an inherited predisposition to consumption is transmitted from one generation to another. They certainly suggest that further investigation of a more scientific kind is required before we can usefully draw conclusions from the statistical investigations which purport to show that there is an inherited predisposition to this disease. It is difficult to account for the progressive fall in the incidence of consumption. Still, it is worth while to make the attempt. The chart exhibited (taken from Dr. H. T. Bulstrode's report on sanatoriums) shows that the fall has been gradual and continuous. It further shows that such things as the Public Health Act of 1875, the discovery of the tubercle bacillus, the Housing of the Working Classes Act, and the commencement of notification and sanatorium treatment have produced no immediate or unusual fall. There can be no doubt that during this period preventive measures, which I have already shown can definitely affect the mortality from the disease, have had their effect. The limitation of the opportunities for repeated infection, perhaps more especially by segregation to which Dr. A. Newsholme has drawn attention, must be credited with some part of this improvement. The better

conditions of living now prevalent must have played some part in raising the resistance of the nation. Few will, I think, deny that part of this diminished mortality is due to improved medical knowledge and improved methods of treatment. It is unquestionable that a larger proportion of consumptives during this period have been cured in the popular sense of the term than formerly. As we are all infected at some period of our lives this tends to show that we have acquired a greater resistance to the disease. In other words, a larger proportion of sufferers have acquired at any rate a partial immunity to tuberculosis. Is it impossible that these people have transmitted a partial immunity to the disease to their descendants? This view was suggested by Dr. H. Maxon King at the London Congress on the basis of observations on 242 cases of tuberculosis which occurred in his own practice. It has so far received little consideration, but it merits investigation, for if there is any truth in it, it affords suggestive evidence to account for the fall in mortality in nations where adequate preventive measures are taken, and amongst which an increasing number of people are cured of the disease and so acquire for themselves a partial immunity.

Calmette's experiments throw a little light on this part of the question. This observer has shown that if an animal is infected with a dose of bacilli which is just sufficient to cause a lesion with which the animal is capable of dealing and from which it recovers, it is a matter of some difficulty to affect that animal with subsequent larger doses, at any rate of more difficulty than in the case of an animal which is in the first instance given a dose which is sufficient to produce a caseating lesion—that is to say, the first animal has acquired a partial immunity. The same thing is often seen in medical practice; for example, a child who has suffered from tuberculous glands and has got well is less likely, in our experience, than others to suffer from pulmonary tuberculosis in adult life. Man is therefore capable of acquiring a partial immunity to tuberculosis. Can he transmit this? As the immunity is partial we cannot expect much result in one generation if it is transmitted, but a succession of generations of persons with acquired immunity might lead to some transmission. In a community in which opportunities for infection are limited as much as possible and in which adequate medical treatment is rewarded by an increasing proportion of arrested cases—that is, of cases with an acquired partial immunity—it would appear that the incidence of tuberculosis diminishes. In a community in which fewer preventive measures are taken and in which medical treatment produces fewer cases in which a partial immunity is acquired, the incidence of the disease does not appear to show the same steady diminution.

If we look at infective disease as a whole there is some evidence to show that when such a disease has been endemic —as opposed to epidemic—in a community for a long period of time, it tends to become of a milder type. Thus syphilis is held by some to have become, in Sir Jonathan Hutchinson's words, a much less virulent malady in Portugal from this cause. The same thing is held to be true of small-pox, measles, and scarlet fever. Conversely, there is some evidence to show that when an infective disease is introduced to a new community—a virgin soil—it is of a more severe and fatal type than when it occurs in a community which, through many generations, has been accustomed to its prevalence. An example of this is the introduction of measles to the Fiji Islands in 1875. The natives had not previously suffered from this disease and this epidemic produced 20,000 deaths in four months. Another example is the introduction of syphilis to Greenland. So far as tuberculosis is concerned M. Cornil has reported that the natives of Patagonia did not know pulmonary tuberculosis before the installation of the English mission. The missionary's wife suffered from consumption. She collected a number of native children round her who were better fed, clothed, and housed than their brethren. In spite of this "a veritable epidemic of acute phthisis" appeared in their midst. M. Cornil states that the history of colonisation shows many other examples. One further instance is the report that of late years the incidence of tuberculosis has made enormous strides amongst the native population of South Africa who a few years ago were practically free of the disease. It is suggestive in the light of the above that Dr. Shrubsall has found, and my experience is the same, that an Englishman who contracts tuberculosis in the East, such as Singapore or a Chinese station, usually offers less resistance to the disease than the Englishman who contracts it in his own country, in spite of the fact that the consular reports seem to show that in the natives of these countries the disease is of a comparatively mild type.

My purpose has been to show that our knowledge on the subject of any hereditary influence on tuberculosis is far from complete. Certainly the evidence in favour of an inherited predisposition is not sufficiently strong to make me vary my practice of refusing to advise those who have suffered from pulmonary tuberculosis and who have acquired a partial immunity in the process of the arrest of the disease, to refrain from marriage.

A general survey of the whole subject suggests that the following conclusions are not wholly wide of the mark:—

1. The hereditary transmission of the germ is so infrequent that it is a negligible factor.

2. The incidence of tuberculosis depends in the main on two factors—(*a*) exposure to infection, which in turn is governed by the dose received and the virulence of the particular strain of bacillus; and (*b*) the undermining of the resistance of the individual by insanitary conditions and by disease.

3. The more adequate the preventive measures taken in any community the less are the incidence and mortality of the disease.

4. The more adequate the medical treatment—that is, the greater the proportion of persons in whom the disease has been arrested and who have thereby acquired a partial immunity—the less are the incidence and mortality of the disease.

5. As at death we all, or nearly all, show evidence of having at some time been infected with tuberculosis, and as most of us are able to overcome the infection, it is clear that the diminished opportunity for repeated infection, brought about by preventive measures and better medical treatment in this country, cannot wholly account for the diminishing incidence and mortality of the disease.

6. There is some evidence to suggest that the diminishing incidence and mortality of the disease may be in part due to a partial immunity inherited in the course of generations from tuberculous ancestors in whom the disease has been cured.

7. The theory that there is an inherited predisposition to tuberculosis is based on insufficient evidence.

Portland-place, W.

VICIOUS CIRCLES ASSOCIATED WITH DISORDERS OF THE DIGESTIVE SYSTEM.[1]

BY JAMIESON B. HURRY, M.A., M.D.CANTAB.,
PRESIDENT, READING PATHOLOGICAL SOCIETY.

DISORDERS of digestion are usually complicated by the presence of vicious circles. This liability arises in part from the interdependence of the chemical, physical, and vital processes associated with digestion; in part also from the close sympathy between the gastro-intestinal tract and other organs, even the most remote. Disease here sooner or later breeds disease there, action and reaction being in continuous operation. The vicious circles associated with digestion are too numerous to be dealt with exhaustively in a brief paper; but some typical examples will direct attention to the importance of the subject and to its bearing on diagnosis, prognosis, and treatment. For practical purposes a regional classification such as the following will be found convenient[2]:—

Group I., circles associated with the mouth.
Group II., circles associated with the stomach.
Group III., circles associated with the intestines.
Group IV., circles associated with the rectum and anus.

GROUP I.—*Circles Associated with the Mouth.*

To this group belong some circles of interest both to the medical and to the dental practitioner. Oral sepsis,

[1] A paper read before the Reading Pathological Society, Nov. 12th, 1908.
[2] I have elsewhere suggested a classification of vicious circles based on their mode of origin (chemical, infective, mechanical, neurotic circles, &c.). Illustrations of most of these will be found below. Cf. Brit. Med. Jour., 1907, vol. i., p. 1104.

for example, leads to dental caries; dental caries in its turn leads to oral sepsis. The deposition of tartar from the saliva gives rise to another circle by irritating the gum and causing it to recede from the tooth, leaving the neck and fang exposed. The exposed fang in its turn receives a coating of tartar, exciting further irritation and recession, and so the morbid process is continued, often to be only interrupted by the loss of the tooth. But oral sepsis has constitutional as well as local effects and frequently leads to gastro-intestinal catarrh and malnutrition. "Then a 'vicious circle' may become established; oral sepsis leading to systemic disturbance will tend to lower the resistance locally and to encourage the continuance of infection and absorption."[3] During infancy, while the eruption of the teeth is taking place, sepsis and defective nutrition may complicate the course of events by hindering the proper development of the maxillæ. Such imperfect development promotes dental caries and malnutrition. In the words of Goadby:[4] "Among children we find impaired nutrition and with it impaired growth; with this, again, badly developed maxillæ, and thus the vicious circle is complete."

GROUP II.—*Circles Associated with the Stomach.*

These may either concern the internal relations of the stomach or its relations with other organs. An example of the first occurs in atonic dyspepsia such as is associated with anæmia. The defective quality of the blood supplied to the stomach in anæmia leads to enfeebled peristaltic movements and hence to impaired nutrition of the stomach. From impaired nutrition results further weakening of the musculature, and thus is established one of the vicious circles so frequently associated with dyspepsia. But a weakened peristalsis has ill-effects extending in other directions. The adequate secretion of gastric juice depends largely on the peristaltic movements bringing the food pulp into repeated contact with every portion of the gastric mucosa. Hence any condition that weakens peristalsis diminishes gastric secretion. The result is that the ingesta are imperfectly digested, remain too long in the stomach, and set up irritation and congestion which further enfeeble the musculature.

Again, the weakened peristalsis which checked the adequate supply of blood and of gastric juice hinders absorption from the walls of the stomach, since such absorption is regulated by the movements of the stomach and by the activity of digestion. If the peptones are not removed at the proper time the necessary repose of the gastric glands is curtailed and digestion of the following meal is hindered. In brief, peristalsis, nutrition, secretion, and absorption are in such close reciprocal relation to each other that disorder in the one invariably involves the others. It matters little which function is first disturbed, the chains of a vicious circle are inevitably riveted round the dyspeptic. In atonic dyspepsia the food is often unduly retained, undergoes fermentation, and causes such an accumulation of gas that the stomach yields to the pressure and dilates. The dilatation in its turn increases the stasis and thus becomes progressive. "This *circulus vitiosus*," as Cohnheim[5] points out, "is aggravated by the fact that the products of the abnormal fermentations may act as exciters of inflammation in the stomach itself and may set up gastritis or add to its severity if already present. It need excite no surprise then that such conditions are, as a rule, very obstinate and are hardly ever perfectly recovered from except after the adoption of a really rational line of treatment." In many of these cases boulimia is a troublesome complication, resulting from, as well as aggravating, the gastric dilatation. Here also "a vicious circle is established and the morbid condition aggravates itself automatically."[6] Occasionally a mechanical condition contributes to the gastrectasis. The enlarged and loaded stomach sinks in the abdomen and pulls down the horizontal section of the duodenum. The result is a kinking of the latter which hinders the escape of the contents of the stomach. Hence follows, as Glenard[7] points out, a further tendency to dilatation and sinking of the stomach.

Another functional disorder of the stomach is gastric irritation or catarrh, generally caused by irritating ingesta. In the first stage there is increased secretion of the gastric juice (especially of hydrochloric acid) as well as increased peristalsis, these being compensatory and promoting the early evacuation of some of the contents of the stomach. The over-activity, however, is soon followed by exhaustion and impaired motor activity, as a result of which any food remaining in the stomach tends to ferment, setting up much the same circles as have been mentioned under atonic dyspepsia. In fact, the two conditions are closely allied.

Acute and chronic gastritis are severer disorders than those so far dealt with and are provoked by acute irritation or by excessive quantity of food. The associated morbid circles are similar to those already described but are complicated by an inflammatory condition. Ewald[8] gives the following description: "In diesen Fällen kommt es zu einer Störung der Saftsecretion und der motorischen Function des Organs, als deren Folgen entzündliche Processe der Schleimhaut entstehen, die ihrerseits wieder auf die Secretion verzögernd oder hemmend einwirken, woraus sich dann ein Circulus vitiosus in optima forma entwickelt. Derselbe wird durch die Bildung abnormer Zersetzungs- und Gährungsproducte, . . . unterstützt." Another form of circle is associated with gastric ulcer, a disease from which recovery is often incomplete, leaving behind it a liability to relapse, and a diminished power of resisting fresh attack. The resulting lesion increases with each relapse until the cumulative effect may be extensive. Doubtless the impaired general nutrition due to the ulcer has some effect in rendering the mucosa less able to resist the extension of the mischief.

Somewhat wider circles embrace the intestines, the liver, in fact, the portal area. If, for example, imperfectly digested food escapes through the pylorus a catarrh of the intestines is set up which in its turn is reflected on the stomach. Ewald[9] goes so far as to say that this vicious circle (Zirkelschluss) is formed in all diseases of the stomach. Equally intimate is the correlation between stomach and liver. Every gastric and intestinal derangement reacts on the liver, while conversely every liver derangement reacts on the stomach. Lauder Brunton[10] who noticed how the composition of the blood made to circulate through an excised liver affected the rate of flow, suggests the following explanation: "Indiscretion in eating or drinking disturbs the digestive processes in the stomach and intestines; the products of imperfect digestion or of decomposition in the intestine being absorbed into the veins pass to the liver; they may there induce an obstructed flow through the hepatic capillaries; the venous blood returning from the stomach and intestines will no longer be able to find an easy passage into the general circulation, and venous congestion of the stomach and intestines will be the result. Such venous engorgement as this will interfere with gastric and intestinal digestion, and this again will react on the liver. Here, then, is a vicious circle which it is necessary to break."

The second division of circles relates to the stomach in its, so to speak, foreign relations, in its relations to organs unconnected with digestion. Hippocrates[11] has a famous aphorism:—

ὥσπερ τοῖσι δένδρεσιν ἡ γῆ, οὕτω τοῖσι ζώοισιν ἡ γαστήρ

(What the soil is to the tree the stomach is to the animal), and it is on this relation of the stomach to the animal that many circles depend. If the animal is out of health the stomach suffers. If the stomach is out of health the animal suffers. This vicious circle embraces the problem of nutrition in all its ramifications. But some organs are more susceptible than others. The delicate tissues of the central nervous system would on *a priori* grounds be likely to suffer early from gastric disorder, and such is found to be the fact. Defective nutrition of the nerve centres secondary to mal-assimilation quickly reacts on the gastric functions, stomach and brain reciprocally embarrassing each other. Worse still, if in consequence of stasis and decomposition of food poisons are brewed and the blood which should nourish the nerve tissues is itself tainted. Can one wonder that under such conditions a tangle of interactions is set up which it is not easy to unravel?

In neurasthenia, whether of spontaneous or of traumatic

[3] Spokes: THE LANCET, Feb. 24th, 1906, p. 509.
[4] Brit. Med. Jour., 1904, vol. ii., p. 440.
[5] Lectures on General Pathology, NSS., p. 859.
[6] Mitchell Bruce: Principles of Treatment, p. 471.
[7] Virchow: Archiv, vol. clvi., 1899, p. 306.
[8] Eulenberg, Real-Encyclopädie der gesammten Heilkunde, vol. xiv., p. 258, sub Magenkrankheiten.
[9] Eulenburg, Real-Encyclopädie, vol. xiv., p. 269; Lectures on Diseases of the Digestive Organs (NSS.), vol. ii., pp. 486, 487, 526.
[10] Disorders of Digestion, p. 25.
[11] Περὶ χυμῶν, § 11.

origin, protracted and uncontrolled repose may so derange the gastric functions and affect the general health that all inclination for mental and physical exertion vanishes. The patient becomes pre-occupied with his or her own sensations to the exclusion of other interests and affections. A vicious circle is soon established between the psychical condition and the digestive functions of the body. Gastric hyperæsthesia is frequently met with under these circumstances as Mathieu[12] points out: "La douleur, la diminution du coefficient général de la nutrition, l'inquiétude sur leur santé amènent souvent l'éclosion d'un état de nervosisme. ..... Ce nervosisme ainsi accru est une cause nouvelle d'hyperesthésie stomacale, de douleur plus intense et de spasme du pylore. C'est un cercle vicieux dont les affections dyspeptiques présentent de fréquents exemples."

Various circles are set up between the stomach and the heart, often causing the sufferer acute anxiety. A common one is met where worry or insomnia has led to an irregular and weak cardiac action and hence to congestion and œdema of the stomach and intestines. Dyspeptic disorders follow and further depress the heart, a reciprocal relationship being established between them. If the heart is unsound the disorder is still more readily produced, as Robin[13] has described: "Vous vous rappelez combien les troubles gastriques peuvent retentir sur le cœur sain; à plus forte raison seront-ils capables d'impressionner un cœur déjà malade, quand même ils trouveraient en lui leur origine. Ce cercle vicieux où le cœur malade crée les gastropathies qui retentissent sur lui est extrêmement fréquent et son diagnostic vous évitera bien des erreurs de pratique."

Lastly, one of the gravest of vicious circles accompanies a degenerating myocardium, a circle that may begin imperceptibly and steadily widen until it involves well-nigh every organ. *Vires acquirit eundo.* Gibson[14] thus describes it: "Sooner or later, according to its form and severity, chronic valvular disease with compensation itself disposes to failure, by establishing a vicious circle of slow progressive impairment of the viscera and their great vital functions—the lungs, liver, stomach, bowels, kidneys, indeed the myocardium itself."

Some drugs and food accessories create vicious circles, which from their origin may be termed artificial. Alcoholism, for example, excites gastric irritation and anorexia. This condition is followed by a sense of exhaustion and disinclination for work which tempts to further indulgence. At a later stage the chronic atony and dilatation of the stomach,[15] with the circles that have already been described, are apt to follow, and if the misguided victim still flies to the bottle for relief he but pursues a will-o'-the-wisp that will lure him to destruction. Tea is also associated with a circle, especially when infused long and drunk strong as in Ireland. For the resultant dyspepsia further recourse to tea is the usual remedy, a fresh brew being used to remove the very symptoms that former brews have produced. The morphia *habitué* is ensnared by the toils of a habit-circle from which escape is all but hopeless; for this drug, while satiating the immediate craving, creates an appetite for further indulgence and weakens that self-control without which no salvation is possible. A curious condition sometimes accompanies morphia poisoning due to hypodermic injection. A large proportion of the drug is first excreted into the stomach and intestines; it is then reabsorbed and re-excreted, thus setting up a vicious circle.[16] The injudicious administration of anodynes and narcotics may excite some reciprocal relations. For example, if insomnia, caused by dyspepsia, is habitually treated by opium or chloral a secondary dyspepsia may be provoked which keeps up the insomnia. Again, if in ptomaine poisoning the irritation is allayed by sedatives, when the irritant should be removed by an emetic or a purge, the result may be a prolonged retention and increased absorption of the poison leading to a further use of the sedative.

A mechanical circle may be caused by a stretching of the mesentery across the duodenum in cases of gastrectasis: "In some of the cases of acute paralytic dilatation of the stomach it would appear that the small intestines have been driven downwards and backwards into the pelvis by the enlarging organ, and that the mesentery has been drawn tightly across the duodenum. In such cases, in addition to the stomach, the duodenum is distended to the point at which it is crossed by the mesentery, and a vicious circle is thus established."[17] Albrecht[18] draws attention to a curious circle arising in such cases of obstruction owing to the fact that any water that is imbibed cannot reach the intestines, and consequently is neither absorbed nor quenches thirst. The result is that the unallayed thirst causes more water to be drunk, producing increased distention of the stomach, increased obstruction, and increased difficulty in satisfying thirst.

GROUP III.—*Circles Associated with the Intestines.*

Various circles referred to in Group II. apply *mutatis mutandis* to the intestines and need not be further described. Amongst such are the reciprocal conditions associated with visceral congestion and a failing myocardium, with defective peristalsis and fermentation of the ingesta, with enfeebled nutrition and dyspepsia, &c. Other circles only concern the intestines and are largely dependent on anatomical relations. Ordinary colic caused by the arrest in the bowels of some irritating food supplies a common example; indeed, any cause of increased motor activity of the intestine can set up colic, since "every acceleration of peristalsis in the upper loops causes an accumulation of contents and increased pressure in the adjacent intestine. A *circulus vitiosus* results: the peristalsis increases the stasis above the obstacle and the stasis excites the peristalsis.[19] Again, when a coil of intestine is strangled by a band of adhesion or a hernial ring its lumen is soon distended with blood and products of decomposition. As the resulting tension on the intestinal walls increases fresh coils of gut with their mesentery are drawn into the ring and in their turn strangled and distended. As the ring tightens the distension increases; as the distension increases the ring tightens.[20] A similar condition accompanies volvulus, which both causes, and is maintained by, meteorism.

Another circle is met with in intussusception, where the intussusceptum excites the intussuscipiens to vigorous peristalsis. The peristalsis in turn increases the length of the invaginated intussusceptum, cause and effect acting and reacting reciprocally on each other. In the case of hernia the ring tends to enlarge every time the gut descends, which enlargement facilitates a re-descent of the gut. A strangulated hernia associated with secondary vomiting supplies another example, since the strangulation provokes the vomiting and the vomiting increases the strangulation.

The close connexion between the intestines and the central nervous system is seen in membranous colitis with its frequent nervous complications. In fact, the local and the neurotic condition appear often to play into each other's hands, as Mathieu[21] points out: "Dans la côlite muco-membraneuse ..... il semble toutefois y avoir là souvent un veritable cercle vicieux; le nervosisme et l'affection colique retentissent l'un sur l'autre et s'exagèrent réciproquement." And again: "La côlite, les douleurs qu'elle provoque, les troubles de la nutrition qu'elle amène, sont de nature à créer ou à entretenir l'état nerveux. Le nervosisme à son tour exagère les phénomènes de côlite: c'est un cercle vicieux." Manson[22] has drawn attention to a "vicious pathological circle" associated with sprue, especially as met with in the half-starved populations of Eastern countries. In sprue digestion and assimilation are early affected, leading on to tissue starvation and in time to destruction of the secreting and absorbing mucous membrane of the alimentary canal. "As a result of this destruction ..... digestion and absorption cannot be effected; thus, so far from proving a benefit to the starving, good food and plenty of it does but precipitate death, inducing by its mechanical and chemical effects further irritative changes in the starved and eroded bowel."

[12] Traité des Maladies de l'Estomac et de l'Intestin, p. 230.
[13] Les Maladies de l'Estomac, p. 966.
[14] Text-book of Medicine, vol. ii., p. 127; "Vicious Circles associated with Disorders of the Heart," Brit. Med. Jour., 1903, vol. i., p. 793.
[15] Victor Horsley and Sturge: Alcohol and the Human Body, pp. 193, 205.
[16] Allbutt and Rolleston: System of Medicine, vol. ii., part ii., pp. 942-3, 956.
[17] Barnard: "Intestinal Obstruction" in Allbutt and Rolleston: System of Medicine, vol. iii., p. 769; Virchow, Archiv, vol. clvi. (1899), p. 306.
[18] Virchow, Archiv, loc. cit.
[19] Sklodowski: cf. Nothnagel's Diseases of the Intestines and Peritoneum, p. 367.
[20] Barnard in Allbutt and Rolleston; System of Medicine, vol. iii., pp. 711, 801.
[21] Traité des Maladies de l'Estomac et de l'Intestin, pp. 288, 304.
[22] Allbutt and Rolleston: System of Medicine, vol. ii., part ii., pp. 550, 557.

Bacteriological research has brought to light a circle associated with cholelithiasis. In a large proportion of attacks micro-organisms that have reached the gall-bladder excite a catarrh of its mucous membrane, which results in a disintegration of the epithelial cells, amongst which cholesterin, bilirubin-calcium, and micro-organisms are deposited. In course of time these become aggregated into biliary calculi, which in their turn keep up the catarrhal condition to which they owed their origin. A circle may also be set up in those cases of appendicitis which are followed by recovery although there is no *restitutio ad integrum*. Recovery is at the cost of some permanent anatomical lesion and of lessened resistance to fresh attack. The first attack has bequeathed a liability to recrudescence on trivial provocation and each time the lesion increases. The acute attack and the lowered resistance act and react on each other, ending but too frequently in a fatal catastrophe.

Mention has already been made in Group II. of the circle associated with a failing heart and an impure blood-supply due to visceral congestion and stasis. If the stasis is so severe as to lead to ascites (including hydrothorax and hydropericardium) the abnormal pressure conditions will aggravate the heart failure and set up a condition of grave peril to life. The ascitic effusion, by pressing on the renal veins, may also impede the excretion of urine; the impeded excretion further increases the ascites.

GROUP IV.—*Circles associated with the rectum and anus.*

Various circles occur in conjunction with constipation[23] and defæcation. Dilatation of the rectum and constipation, for example, stand in reciprocal relations, each condition acting and reacting on the other. If fæcal masses remain long in the intestine or in the rectum, much of the contained liquid undergoes absorption, the fæces being converted into dry and scanty scybala. In course of time these scybala may cause obstruction and further increase the constipation, fæcal stasis being both cause and effect of fæcal stasis. Constipation is frequently complicated with hæmorrhoids, anal fissure, ovarian tenderness, or even trigeminal neuralgia,[24] all of which, owing to associated pain, cause inhibition of peristalsis and consequently aggravate the constipation. Strümpell[25] has drawn attention to the occasional connexion between neurasthenia and constipation. "The nervous affection ..... is often probably the primary disease, which is followed by constipation, while in other cases the habitual constipation leads secondarily to the nervous depression. The two conditions usually form a vicious circle, since each of them is able to keep up and to increase the other." Two circles may be met with in prolapsus recti. Prolapse causes tenesmus; result of the tenesmus—increased prolapse; prolapse also causes relaxation of the sphincter; result of the relaxation—increased prolapse.

An illustration of an infective circle occurs in persons whose rectum is infested with oxyurides. The consequent itching and scratching lead to the helminths or their ova being caught under the nails, conveyed to the mouth, and swallowed by the host. From the stomach the ova reach the intestines and rapidly attain maturity. Thus the irritation secures by auto-infection successive generations of the parasite. The present vogue of quack aperients and the impatience of over-zealous disciples of Æsculapius are responsible for the artificial circle often set up by the injudicious use of cathartics. The irritation of the mucous membranes brought about by indiscriminate drugging depraves the secretions and produces a condition which is urged in proof of the need of further evacuations. "And thus the practice proceeds in a vicious circle of habit from which the patient is rarely extricated without more or less injury to his future health."[26] The constipation is relieved but only to be followed by more obstinate constipation requiring stronger aperients.

Enough has been said to indicate the frequency of vicious circles in disorders of the digestive system. The list, however, is far from exhausted, for the various functions of the body are so linked together that disturbance of the equilibrium existing between them radiates far and wide, cause and effect acting and reacting continuously on each other. It was well said by Paget[27] that "the health of each part is a necessary corollary of the health of all the rest." Equally true is it that disease of one part involves disease of all the rest.

Conclusion.—The *ἰατρὸς πολύπειρος* may sometimes anticipate and prevent the establishment of a vicious circle if he is familiar with the course of pathological processes and intervenes at the right moment. *Melius est prevenire quam preveniri.* When a circle is present, a recognition of the reciprocally acting forces will solve many an enigma in obscure disease and pave the way for rational treatment. The graphic method of analysing a circle into its two, three, or more component factors, as shown in the accompanying diagrams, will be found of considerable assistance (cf. Figs. 1 and 2).

FIG. 1.

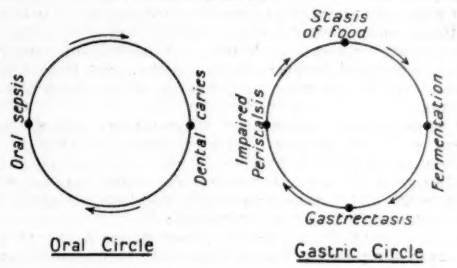
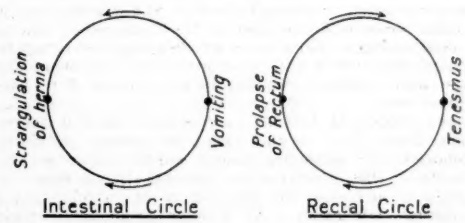


FIG. 2.



In the matter of treatment the removal of the exciting cause will at times insure recovery. Or the weakest link in the chain of actions and reactions may be snapped and the circle broken. In yet other cases each of the factors acting reciprocally on each other must be attacked. Never should it be forgotten that the presence of a vicious circle is a *signum mali ominis*, tending to aggravate and perpetuate disease. The wise physician will adopt as his motto the words of Ovid—

"Principiis obsta; sero medicina paratur,
Cum mala per longas convaluere moras."

Reading.

[23] Some of these circles associated with constipation might equally well have been placed in Group III., but for convenience sake are grouped together here.
[24] Allbutt: System of Medicine (first edition), vol. vi., p. 731.
[25] Text-book of Medicine, pp. 402-3.
[26] Sir Henry Holland: Medical Notes and Reflections (1839), p. 99.
[27] Quain: Dictionary of Medicine (1894), vol. ii., p. 315.

MULTIPLE VESICAL CALCULI.*

BY WILLIAM J. MALONEY, M.D. EDIN.,
RESIDENT MEDICAL OFFICER, KASR-EL-AINY HOSPITAL, CAIRO.

CALCAREOUS matter in urine was formerly termed sand, gravel, or stone according as it occurred in crystalline deposits, small, or large concretions. Natural characters by which to differentiate these forms were unknown, so arbitrary standards, based on a common property, weight, were used. Thus, Sir Henry Thompson[1] taught that a vesical concretion should not be deemed a stone unless it weighed at least 20 grains; this was rather an exacting standard, especially for concretions of low specific gravity, and it disdained as gravel what were indubitably stones. But the researches of Rainey, Ord,[2] and Carter[3] have shown that all stones contain colloid material as a characteristic and essential constituent which naturally distinguishes them from any other form of calcareous deposit. A concretion free from colloids is not a calculus; conglomerations of

* The superior figures refer to the bibliography at the end

crystals, no matter how big, which do not contain colloids may correctly be called gravel; and the most minute calcareous formation which by a laminated structure proclaims the presence of colloidal cement may properly be termed a stone. As the weight of concretions, which by virtue of their chemical composition must rank as calculi, may thus vary within wide limits, it is essential to the comparing of instances of multiple vesical calculi to know not only the number but also the weight or bulk of the stones. So far as is possible these data are given in the summary of cases which follows, but omissions are unavoidable owing to the incompleteness of many of the records.

The description "multiple vesical calculi" must be rigorously restricted to cases in which the simultaneous occurrence in the urinary bladder of two or more stones can be conclusively demonstrated. Instances of the coexistence of two stones are comparatively common; three,[5–8] four,[9–12] and five[13–16] are scarcely noteworthy unless of large size or removed under special circumstances; six,[18–20] seven,[21–24] and eight[25–28] are relatively rare, and examples of more than eight are so few as to merit a brief summary of those I have found in the extensive literature at my disposal here in Cairo.

Bellamy[29] records a case where there were 1 large and 8 small mulberry calculi; Godlee,[30] a chain of 9 stones—6 in the bladder, 2 in the prostatic, and 1 in the bulbous urethra; Raymond Johnson,[31] 3 fragments and 9 acicular phosphatic calculi, of which the largest was 7-8ths of an inch long; Smith,[32] fragments of between 10 and 15 separate stones which varied in size from that of a bean to that of a chestnut; Buckston Browne,[33] 12 uric acid "calculous masses," weighing 200 grains, which "arose from the spontaneous fracture and reunion of multiple calculi"; Sinclair Brown,[34] 14 uric acid stones, the largest 105 grains, the smallest 40; Thomas,[35] 15 uric acid stones, weighing 140 grains; and Brugnatelli,[36] 16 stones of about the size of small peas, composed of calcium carbonate. Sir George Humphry[37] refers to a specimen of 16 vesical calculi now in Guy's Hospital Museum and mentions a case, also of 16 stones, within his experience. Mansell Moullin[38] records an instance of 18 separate uric acid calculi in a man who previously had singly passed 5, and D'Estrées[39] one where the fragments arising from the spontaneous disintegration of a large stone formed the nuclei of 22 other stones: Keyes[40] cites Groves's case of 25 calculi but gives no details; Plowright[41] found post mortem 25 uric acid stones of which 4 were intact and 21 fragmented. Freyer[42] records an example of 25 also; Rivington,[43] of 26; Reginald Harrison,[44] of 35, weighing 660 grains; Thompson,[45] of 40 composed of uric acid; Brugnatelli,[46] of 48 small pea-like stones consisting mainly of calcium carbonate; Erichsen,[47] of 50 of uric acid, weighing 900 grains; Shattock,[48] of 50 also, probably prostatic, the largest being 2 centimetres in its longest diameter; Littlewood,[49] of 60; and Innes,[50] of 105, weighing altogether 3 ounces 69 grains, which he found post mortem in a case of peritonitis. Guy's Hospital Museum contains a specimen (No. 2213) of 142 ammonium urate stones, all of the same shape—cubes with rounded angles—removed by Sir Astley Cooper[51]; Physick's cases[52 53] of 117, 242, and 307, calculi are widely quoted, but no data are given of the size of the stones; the same surgeon extracted over 1000 calculi,[54] none of which were larger than a small bean, from the bladder of Chief Justice Marshall of the Supreme Court of the United States. Murat[55] found 678 stones in the bladder and 1000 in the kidneys of an old man. Foster[56] washed out of a bladder "between 300 and 400 stones, some as large as a small pea and one the size of a bean"; "the bladder contained altogether over 1000 calculi." Smith[57] had a case in which there were several thousand pisiform uric acid calculi of a total weight of 3 ounces, and Ellis Blake[58] removed post mortem a woman's bladder "which was distended to about the size of a small fist, full of stones about the size of duck shot. ..... They were not counted." Heath mentions a case of 200 faceted calculi (? perineal) in the *Indian Medical Gazette* (Vol. XXXVIII., p. 201).

In addition to these there are cases of recurring multiple vesical calculi which have been recorded by Buckston Browne (two),[59] Bruce Clark,[60] and Thomas.[61] In one of Buckston Browne's cases there were removed by suprapubic lithotomy at successive periods from the same patient: first, several (total weight 114 grains); next, three (total weight 46 grains); then one; then another; and lastly, a small sacful of stones which consisted of uric acid and phosphates.

My case is, so far as I can ascertain, unique. The specimen is now in the Museum of the Royal College of Surgeons of England. The total number of stones was 122; their weight, 459 grammes (16 ounces 95 grains); and their volume, 264 cubic centimetres. The single large stone was oval, grayish white, and fairly smooth. It weighed 119 grammes (4 ounces 22 grains) and measured 60 millimetres in the long diameter and 48 millimetres in the short. It was broken before extraction; on pressure being applied by forceps a friable outer shell separated in large fragments, leaving a central, slightly harder core, built of laminæ which were of similar chemical composition but of various densities. As it was approximately of the same composition as the small stones and equally as friable its large size must have been due to a comparative freedom from friction which it probably enjoyed, not only from its partial encapsulation by the bladder wall but also from its being the first formed. In this connexion the absence of facets from its surface is noteworthy.

The small stones varied considerably in size, the largest 6¼th grammes (96 grains). 11 weighed more than 5 grammes (77 grains); 10 more than 4 grammes (62 grains); 15 more than 3 grammes (46 grains); 26 more than 2 grammes (31 grains); 54 more than 1 gramme (15 grains); and 5 more than 0·5 gramme (8 grains). They were mainly white but many were tinged with gray and yellow. Their other physical characters were chiefly the result of their number; they had a tendency to a rectangular plan with rounded ends and angles and, in addition, many were concave-convex. By friction at numerous points of contact each stone had become much faceted. Constant rubbing also had made them dense and smooth, and although some were dull and lustreless many were highly polished and a few were even eburnated. As none showed any evidence of fracturing nor even of roughening of their surface, and as four I examined were not laminated, excepting that the outer layer was the denser, I thought each stone had had an independent origin. Moreover, their water-worn appearance and rounded borders also seemed to render improbable their common origin from the spontaneous disintegration of one or more large calculi. The following are the notes of the case.

An Egyptian fellah, aged 28 years, came to Kasr-el-Ainy Hospital on April 28th last complaining of painful micturition, blood in the urine, and a hard lump in the perineum. The pain had been present intermittently for about five or six months and the blood for several years, during which time small stones had frequently been passed per urethram. The perineal mass first appeared about April 15th and rapidly increased in size; at the same time, micturition became acutely painful and the urinary stream diminished to an incontinent trickle.

On examination a smooth, round, tender, non-fluctuating, hard, almost immoveable mass, of the size of a walnut, was felt in the middle line of the perineum about one inch in front of the anus. Per rectum, another much larger mesial mass, hard, smooth, globular, and slightly mobile, was found anteriorly; it could also be felt on deep palpation above the symphysis pubis but there was no bulging of the anterior abdominal wall. The urine was scanty, blood-red, alkaline, and of a specific gravity between 1015 and 1020: it contained blood and pus in considerable quantity and many bilharzial ova. The patient was somewhat emaciated and anæmic, the lungs were emphysematous, but otherwise the physical examination was negative. The passage of a sound was difficult: it proved the perineal tumour to be a stone or stones distending the urethra, and completely occupying its lumen except for a central canal large enough to admit a medium-size sound. The mass in the bladder also was found to be calcareous. The movements of the sound within the bladder cavity were very restricted.

On April 30th lateral lithotomy with a curved staff was performed; the constituents of the perineal tumour, three faceted white, smooth stones, were first removed from the urethra; the bladder was then found to contain quite a quarry of stones, loosely cemented together by a somewhat granular easily friable powder, so as to form a globular mass. There appeared to be no bladder cavity; the bladder wall was closely contracted around the tumour, forming a shell which seemed as if glued to the outer layer of stones. The

stones were removed one by one by my finger and a scoop, while an assistant made pressure through the rectum and abdomen so as to keep the mass applied to the wound in the neck of the bladder and to afford some resistance to the delving action of the scoop; after 80 minutes 121 separate stones were thus removed, together with much friable débris like powdered chalk and the great globular mass in the bladder had disappeared; one large oval stone of about the size of a duck's egg still remained, situated about the fundus of the bladder which was so contracted around it as partially to embed it. As it was too big to extract unbroken I partially crushed it with forceps and carefully extracted the fragments. The bladder was drained through the perineal wound and washed out night and morning with boric acid solution. Ten days after operation the urine, which still contained pus in small amount, was passing in about equal quantities by the wound and by the normal route; in three weeks the perineal wound was quite healed, the urine was acid, and only a few pus cells and red blood corpuscles could be detected microscopically.

Six days after the operation the patient developed a virulent ulcerative stomatitis which rapidly spread till it involved almost the entire alveolar margin and exposed patches of bare bone on both maxillæ; this infection, without any rise of temperature, continued unabated for nine days and then began steadily to die down. His general condition improved considerably as his mouth healed but he contracted acute dysentery and died within 36 hours, on the twenty-sixth day after the operation.

The following is a *précis* of the post-mortem report furnished by Dr. A. R. Ferguson, professor of pathology, School of Medicine, Cairo. "Peritoneum normal. Bladder slightly enlarged, rather thin-walled; on inner surface superficial areas of yellowish discolouration (? necrotic) and a few small ulcers but otherwise mucous membrane healthy; pus exuded from orifice of left ureter. Kidneys, normal size, both very soft, capsules non-adherent; diffuse purulent infiltration of substance without definite abscess formation; ureters normal. Intestines, colon distended with large quantity of altered blood; extensive superficial ulceration suggestive of acute dysentery. Spleen, weight 150 grammes, soft atrophied pulp; does not suggest septicæmia. Liver, slight fatty infiltration; no gross lesion. Heart, soft, flabby, fatty mascular walls, no valvular lesion. Lung emphysematous; congested and œdematous at bases. Bilharzial worms were present in the portal blood. The relatively healthy condition of the bladder post mortem may have been due partly to the toleration alleged to be characteristic of the oriental bladder and partly to the rounded shape and immobility of the mass of stones. There was no appearance of calcareous matter in either kidney or ureter."

Mr. W. M. Colles, B.Sc., assistant professor of chemistry, kindly analysed a few of the small stones. They consisted of: Ammonium magnesium phosphate, calcium carbonate, ammonium urate, and calcium oxalate (traces). The large stone was of similar composition but contained relatively more urate.

As bilharzial ova were present in the urine I looked for them in four stones but found none.

The case was admitted to the wards of Mr. F. C. Madden, who kindly allowed me to operate and to conduct the after-treatment.

Bibliography.—1. Thompson: Transactions of the Royal Medical and Chirurgical Society, vol. lxxiii., p. 219. 2. Ord: Influence of Colloids upon Crystalline Form and Cohesion, London, 1879. 3. Carter: Microscopic Structure and Mode of Formation of Urinary Calculi, London, 1873. 4. Thompson: THE LANCET, April 5th, 1873, p. 479. 5. Prescott Hewett: THE LANCET, Jan. 7th, 1865, p. 8. 6. Ord: Croft's case, Transactions of the Pathological Society of London, vol. xxx., p. 318. 7. Clutton: Ibid., vol. xxxvi., p. 308. 8. Barker: Ibid., vol. xxviii., p. 169. 9. Dunn: Ibid., vol. xlvi., p. 90. 10. Sydney Jones: Ibid., vol. xxxvii., p. 349. 11. Indian Medical Gazette, vol. xxxvii., p. 355. 12. Moore: THE LANCET, Dec. 28th, 1872, p. 912. 13. Morgan: Transactions of the Royal Medical and Chirurgical Society, vol. lxxiv., p. 85. 14. Thompson: Ibid., vol. liii., p. 127. 15. Rivington: THE LANCET, May 16th, 1885, p. 884. 16. Pearce Gould: THE LANCET, Jan. 1st, 1881, p. 15. 17. Ashurst: International Encyclopædia of Surgery, 1886, vol vi., p. 163: Keyes on Urinary Calculi. 18. Plowright: THE LANCET, Oct. 19th, 1895, p. 982. 19. Thomas: THE LANCET, June 9th, 1900, p. 1654. 20. Karandikar: Indian Medical Gazette, vol. xxxiv., p. 92. 21. Buchanan: THE LANCET, March 22nd, 1879, p. 402. 22. Sydney Jones: Transactions of the Pathological Society of London, vol. xxxvii., p. 321. 23. Stretton: THE LANCET, June 19th, 1897, p. 1682. 24. Madden: Intercolonial Journal of Australasia, July, 1902. 25. Page: THE LANCET, Jan. 30th, 1897, p. 318. 26. Erichsen: THE LANCET, March 18th, 1871, p. 369. 27. Jacobson: Operations of Surgery, London, 1902, p. 406. 28. Heurteloup: Principles of Lithotrity, 1831, p. 373. 29. Bellamy: THE LANCET, July 2nd, 1881, p. 9. 30. Godlee: Transactions of the Clinical Society of London, vol. xix., p. 319. 31. Raymond Johnson: Transactions of the Pathological Society of London, vol. xlii., p. 217. 32. Smith: THE LANCET, July 8th, 1871, p. 46. 33. Buckston Browne: Transactions of the Pathological Society of London, vol. xli., p. 186. 34. Sinclair Brown: THE LANCET, Oct. 28th, 1899, p. 1157. 35. Thomas: Loc. cit. 36. Brugnatelli: Litologia Umana, Pavia, 1819 (quoted by Holmes and Hulke, in System of Surgery, London, 1883, vol. iii., p. 249). 37. Humphry: THE LANCET, Nov. 30th, 1895, p. 1341. 38. Manseli Moullin: Transactions of the Clinical Society of London, vol. xxix., p. 29. 39. D'Estrées: Les Causes de la Gravelle et de la Pierre, 1878, p. 130. 40. Keyes: Op. cit. 41. Plowright: Transactions of the Pathological Society of London, vol. xlvii., p. 132. 42. Freyer: THE LANCET, Dec. 12th, 1896, p. 1672. 43. Rivington: Loc. cit. 44. Reginald Harrison: THE LANCET, Sept. 30th, 1899, p. 899. 45. Thompson: Loc. cit. 46. Brugnatelli Loc. cit. 47. Erichsen: Loc. cit. 48. Shattock: Transactions of the Pathological Society of London, vol. xxxvii., p. 325; THE LANCET, Nov. 21st, 1885, p. 960. 49. Littlewood: THE LANCET, March 6th, 1897, p. 688. 50. Innes: THE LANCET, vol. ii., 1883. 51. Quoted by Holmes and Hulke: Op. cit., vol. iii., p. 245. 52. Physick: Gibson's Institutes of Surgery, 5th edition, vol. iii., p. 220. 53. Quoted by Keyes: Op. cit. 54. Quoted by Holmes and Hulke: Op. cit. 55. Murat: Recorded by Coulson, quoted by Keyes, op. cit. 56. Foster: THE LANCET, April 11th, 1874, p. 515. 57. Smith: Recorded by Ord, Transactions of the Pathological Society of London, vol. xxxii., p. 304. 58. Ellis Blake: Quoted by Keyes, op. cit., p. 165. 59. Buckston Browne: Transactions of the Clinical Society, vol. xxiii., p. 88. 60. Bruce Clarke: Ibid., vol. xxiii., p. 232. 61. Thomas: THE LANCET, March 21st, 1891, p. 630.

Cairo.

THE DIAGNOSIS AND TREATMENT OF PANCREATITIS.[1]

BY D. CHALMERS WATSON, M.D. EDIN., F.R.C.P. EDIN.,
ASSISTANT PHYSICIAN, ROYAL INFIRMARY, EDINBURGH.

I HAVE often thought that one of the most interesting studies in medicine is the history of the stages in the evolution of our present knowledge of a particular disease or group of diseases. This is well exemplified in the case of pancreatitis. In the year 1672 Tulpius described pancreatic abscess of pyæmic origin; in 1799 Matthew Baillie describes what he calls a hard pancreas with the lobules distinct, which is what we now should call a case of chronic interstitial pancreatitis, and the same author figures a case of pancreatic calculi, carefully dissected, showing the relation of the bile and pancreatic ducts. Portal, in 1804, described a case of acute suppurative pancreatitis following an attack of acute gout, and Balzer in 1879 first described acute pancreatitis with fat necrosis. No general attention was attracted to the subject, however, until Fitz ten years later published his important papers. The surgical study of the inflammatory diseases of the pancreas in recent years may be said to be the result of an inquiry into the causation of some of the complications of gall-stone disease, and, as W. S. Mayo has pointed out, our present knowledge of these affections is largely due to Mayo Robson who first noticed the disease in connexion with his operative work upon the biliary tract. This knowledge can hardly yet be spoken of as common knowledge, since many recent works on medicine give little or no attention to the subject; and in this connexion it is of interest to note that in the Transactions of our own Society there is no paper on this important subject.

The comparative frequency of the disease and the brilliant results which follow operative interference may be gathered from the writings of Mayo Robson, who, as far back as 1904, pointed to a record of 102 operations undertaken in patients where chronic pancreatitis constituted the chief disease, or where it formed the chief complication of the disease, with 96 per cent. of recoveries, giving a mortality of 3·9 per cent. An admirable survey of recent literature on the diagnosis and surgical treatment of subacute and chronic pancreatitis is given in Robson's and Cammidge's recent work on the surgery and pathology of the gland.

My interest in this subject was aroused in the course of the autumn of last year through the admission to Sir Thomas Fraser's wards, then under my care, of a case of chronic pancreatitis, in which this diagnosis had previously been established by operation. Through the kindness of Sir Thomas Fraser I was later able to show you this patient, who, I regret to say, succumbed some months later. My investigations of this case led me to make a lengthy investigation into the reliability of the so-called pancreatic reaction in the urine, a test devised by Cammidge and relied on by Robson as of great value in the diagnosis of pancreatic

[1] A paper read before the Edinburgh Medico-Chirurgical Society on Nov. 4th, 1908.

disease. The important part which the pancreas plays in carbohydrate metabolism is too well known to require elaboration, and the pancreatic reaction bears on carbohydrate metabolism. In 1904 Cammidge concluded from his investigations that in inflammatory lesions of the gland there is excreted by the kidneys a substance which on hydrolysis yields a body giving the reaction of a pentose. The results of my investigation, based on over 250 analyses, were published in the *British Medical Journal* in April, 1908. Since that time I have extended my observations very considerably, having now examined the urine of over 500 patients who were personally examined and also that of a number of others whose clinical history I know. My later results have not furnished any data which lead me to modify the general conclusions I then formulated, which were summarised as follows:—

> My results confirm the conclusion arrived at by Mayo Robson and Cammidge, that there is a definite and important relationship between the pancreatic reaction in the urine and disease of the pancreas. My results differ from those of Cammidge in so far that I have recorded a higher percentage of positive results in cases similar to those that may have been included in that author's list of control cases. Cammidge found in a group of cases described as miscellaneous—other than those having a direct surgical interest in relation to disease of bile ducts and pancreas—that four only out of 92 gave a positive reaction. The higher percentage of positive results recorded in my series may possibly be due to the fact that I made use of many serious medical cases of a nature commonly associated with advanced arterial disease, and chronic catarrhal conditions in the intestinal tract, conditions that are frequently attended with degenerative or inflammatory changes in the pancreas and other glands. My results lead me to divide the cases in which the pancreatic reaction was present in my series in the following groups:—
>
> 1. A group in which there was definite clinical or pathological evidence of serious organic disease of the pancreas—for example, acute and chronic pancreatitis, usually associated with disease of the bile ducts.
> 2. A group in which the reaction in the urine is associated with pronounced arterial sclerosis, a condition usually accompanied by more or less sclerosis in different glands.
> 3. A group in which the reaction is dependent on congestion and catarrhal conditions of the gland ducts and substance, with associated toxæmia—for example, advanced heart disease, appendicitis, pneumonia, malaria, and the like.
>
> This division is, it is hardly necessary to add, somewhat arbitrary, as most cases are in all probability of mixed origin. If these facts are kept in view, and this urinary reaction is carefully studied along with the other clinical features of a case, I have no hesitation in saying that this new test will prove of great value both to physicians and surgeons in the diagnosis and treatment of pancreatic disease.

As I have on a former occasion given a demonstration of the end reaction of this test I do not intend to dwell further on it. I would, however, draw attention to the practical importance of recognising the degree of the reaction in any given case. This is referred to in my paper. More significance necessarily attaches to an abundant deposit than to the presence of a few crystals which are only determined by microscopic examination.

Clinical types of pancreatitis.—I wish it to be clearly understood that I am excluding from consideration those cases of acute pancreatitis in which the clinical features closely simulate those of acute intestinal obstruction, fulminating appendicitis, and the like, cases which tend to a fatal issue in 48 hours or so if not relieved by operation. I am here only concerned with the clinical features associated with the mildly acute, the subacute, and chronic forms of inflammation of the gland. Cases can be conveniently divided into two groups, those in which jaundice is a prominent symptom and those in which jaundice is absent. A striking point in the clinical picture of pancreatic disease is its protean character. The clinical features of an advanced case may closely simulate those of severe or pernicious anæmia. Cases are on record in which this mistake has been made, and in my series I have seen one case of advanced, and afterwards fatal, pancreatitis in which the general appearances of the patient and of the blood were similar to those of pernicious anæmia. In the earlier stages the clinical features may simply be those of slight indigestion, sometimes associated with neuritic-like pains in the limbs or trunk. Yet again, as in the patient shown this evening, the chief symptom is physical weakness with little or no obvious morbid appearances; in this case in all probability the detection of glycosuria prevented a diagnosis of malingering. Progressive cases tend to a fatal issue, and there is reason to believe that many cases which have died from supposed deep-seated malignant disease in the region of the pancreas have been cases of pancreatitis. The clinical features are perhaps better described in the form of records of actual cases.

CASE 1.—A woman, aged 47 years, was admitted to Professor J. Chiene's ward in February, 1908, complaining of pain in the region of the stomach of about 18 months' duration. The salient points in her history are as follows. About 18 months before admission to hospital, when preparing to go out for a walk one day after dinner she was suddenly seized with acute pain in the region of the stomach, causing her to double up and remain in bed for a day. After some hours she vomited some yellowish-green fluid. About a month later she had a similar, though less severe, attack, and in the next 12 months she had eight or nine similar seizures, the attacks gradually increasing in severity, being later accompanied by pale stools, slight diarrhœa, general weakness, and more or less constant abdominal pain. An important point in the previous history is the fact that she has all her life suffered from bilious attacks, characterised by sickness, vomiting, and headaches of sufficient severity to confine her to bed for a day. On examination the patient was a well-nourished stoutish woman, presenting no obvious morbid appearances, with the exception of a wearied expression when the face was seen in repose. The pain complained of was referred to the epigastric region, at times radiating to the left. On palpating the abdomen a definite tumour was palpable in the region of the pancreas, the swelling being irregular in outline and hard in consistence. The liver, the stomach, and the other viscera appeared to be normal. The stools were large, imperfectly formed, somewhat pale in colour, distinctly fœtid, and chemical examination revealed an excess of fat, which, however, was not pronounced. No muscle fibres were detected on microscopic examination. Examination of the urine revealed a pronounced pancreatic reaction with slight glycosuria, the presence of glucose being confirmed by the fermentation test.

At the operation Professor Chiene found that the tumour was an enlarged and indurated pancreas, the surface of which showed numerous small white areas, resulting from previous fat necrosis. A thorough examination of the liver, gall-bladder, and larger bile-ducts revealed nothing abnormal and the abdomen was stitched up without further operative interference. Three weeks after the operation the patient had an attack of abdominal pain accompanied with marked diarrhœa, jaundice, and some febrile disturbance, these symptoms disappearing within eight days, and the patient was soon discharged. Eight months have elapsed since the operation and through the kindness of Professor Chiene I have been able to show you the patient this evening. Her condition has greatly improved since the operation; she has only had one slight attack and she has been almost entirely free from her old bilious attacks. She takes three moderate meals of a mixed character daily and is free from any symptom of digestive disorder. She still, however, complains of a feeling of marked general weakness, accompanied by a prickly feeling across the upper part of the abdomen and a sore feeling in the corresponding region posteriorly.

The next case to which I refer is representative of a group in which the clinical features pointed to deep-seated organic disease in the region of the pancreas, with no palpable tumour, and the case is instructive as showing the value of the pancreatic reaction in distinguishing between chronic pancreatitis and malignant growth.

CASE 2.—A man, aged 64 years, a railway porter, was admitted to the medical ward in the Royal Infirmary under the care of Dr. R. W. Philip in May of this year complaining of weakness, pain in the stomach, and jaundice. The weakness and pain had existed for three months, the jaundice being of from two to three weeks' duration. On admission the patient was somewhat emaciated and markedly jaundiced. The bowels were constipated, the motions being large and clay-coloured, and the urine contained much bile pigment and a trace of albumin. Physical examination of the abdomen gave negative findings; the liver was not enlarged, the stomach and intestines appeared to be normal, and nothing unusual was detected on deep palpation over the region of the pancreas. The clinical features led Dr. Philip to diagnose the condition as one of deep-seated organic disease of the pancreas, probably malignant, with secondary implication of the liver and bile ducts, and at his suggestion I examined the urine twice. On each occasion the pancreatic reaction was negative. This result strengthened the diagnosis of malignancy, and since this was confirmed at the post-mortem examination we have here a confirmation of Mayo Robson's view that the pancreatic reaction has distinct value in differentiating between chronic pancreatitis and

malignant disease of the gland, a fact of great practical importance. In appraising the value of this diagnostic measure we must, of course, keep in view the fact that a certain proportion of cases of malignant disease is complicated by general catarrhal or interstitial changes throughout the gland.

My third group leads me to refer to the etiology of so-called catarrhal jaundice. Mayo Robson, Sidney Phillips, and other writers have previously suggested that certain cases which are at present regarded as "catarrhal jaundice" may really be "acute pancreatitis," the blocking of the bile-ducts being the result of pressure from an enlarged and swollen head of the pancreas. In the course of the past year I have had the opportunity of, I think, establishing the correctness of this view. I have examined the urine of five cases of so-called catarrhal jaundice, four of which were personally observed. In three of the five there was a marked pancreatic reaction in the urine and in these cases a striking clinical feature was tenderness on deep palpation over the region of the head of the pancreas; in the remaining two the reaction was negative and free palpation of the abdomen in the region of the pancreas failed to elicit any pain. On the strength of these facts I venture to suggest that those cases of catarrhal jaundice which are associated with a well-defined area of tenderness in the region of the head of the pancreas are in reality cases of pancreatitis. The next case is typical of a group in which the pancreatitis is secondary to ulcer of the stomach or duodenum.

CASE 3.—A woman, aged 28 years, consulted me on account of pain in the abdomen and back and vomiting, the symptoms being of eight weeks' duration. Some years previously she had suffered from gastric ulcer. The pain radiated to the left side, its onset had no immediate relationship to the taking of food, and it persisted for some hours. On examination I found marked tenderness on deep pressure one inch above the umbilicus and to the right, the area of pain extending for about two inches, with dulness on percussion over the affected area. The motions were unformed, pale, and fœtid; no microscopic examination was made. There was no febrile disturbance. Under treatment the condition gradually improved, all symptoms disappearing in four weeks, and for the past eight months the patient has enjoyed very good health. In this group I have seen two cases complicated by glycosuria, and one, a male patient under the care of Professor W. S. Greenfield, who developed glycosuria and also melæna when under observation in hospital.

Lastly, I will refer very shortly to the occurrence of pancreatic diseases in some general constitutional conditions in which its existence has not, so far as I am aware, been previously recognised. I have notes of 20 cases of gout and rheumatoid arthritis and four cases of chronic alcoholism seen in private or in hospital practice in which the existence of pancreatic disease was determined by the presence of a marked pancreatic reaction in the urine with tenderness on deep pressure over the head of the gland. Since cases of gout, rheumatoid arthritis, and the like are in the majority of instances associated with a catarrhal state of the intestinal tract, as shown by the fœtid state of the stools, &c., the existence of pancreatic disease in these conditions is not surprising, and its recognition is of practical importance from the point of view of treatment. I have on several occasions been consulted by patients who had previously been dieted for their gouty state along the familiar lines of a marked reduction in animal food, with relative and actual excess of farinaceous foods, in whom examination of the urine revealed a marked disturbance of the pancreatic function. In these cases recovery from symptoms followed the adoption of a diet—more protein, less carbohydrate—the advisability of which had been suggested by the results of urinary analysis. In this connexion it is of interest to refer to the observations of Dr. Katherine J. S. Clark of Craigleith Poorhouse, who, at my suggestion, made a histological examination of the viscera in some fatal cases of rheumatoid arthritis dying in the parochial hospital. In all the four cases examined striking pathological changes were present in the pancreas. I may add that more recently I have examined the urine of a case of rheumatoid arthritis in the same institution in which shortly before death the urine contained over 3 per cent. of sugar, and since this paper was written I have seen in Dr. A. Bruce's ward in the Royal Infirmary another patient with rheumatoid arthritis in which the urine contained 27 grains of sugar to the ounce.

Differential diagnosis.—It is not my intention to refer at length to the many points which are of value in the differential diagnosis of cholelithiasis and malignant disease of the liver or bile-ducts on the one hand and inflammatory or malignant disease of the pancreas on the other. My object is rather to record the results of my investigations into the reliability of recently devised tests for the determination of the existence of pancreatic disease and to refer to their practical importance both in diagnosis and differential diagnosis. The points to which I would draw attention may be shortly summarised as follows.

I. In cases of jaundice of doubtful origin assistance in the diagnosis is afforded by urinary analysis. (*a*) A negative pancreatic reaction points against the existence of pancreatitis. (*b*) In cases of cholelithiasis a positive reaction indicates pancreatitis and is very strong evidence that the stone is impacted at or near the duodenal end of the common bile-duct. (*c*) In cases where cholelithiasis can be excluded and the clinical features point to the existence of organic disease of the pancreas a negative pancreatic reaction points to malignancy.

II. Glycosuria, according to Mayo Robson, is of some value in the differential diagnosis of pancreatitis from malignant disease, this symptom being more common in inflammatory conditions of the gland. I have notes of four cases of malignant disease of the pancreas with distinct glycosuria, but it should be noted that these cases were all examined shortly before death.

III. The site and distribution of the pain have diagnostic significance. The pain of pancreatic disease is referred to the epigastrium and radiates to the left side; in disease of the gall-bladder and the bile-ducts the pain is referred to the right hypochondrium and radiates to the right.

IV. An acute onset with pain and pyrexia points strongly to an inflammatory affection.

V. Emaciation, anæmia, and asthenia may be present in pancreatitis to an extent equal to that present in advanced malignant disease.

With regard to pancreatitis unassociated with jaundice I would like to emphasise the following points.

I. In not a few cases of indigestion associated with flatulence, abdominal discomfort or pain having no distinct relation to food, constipation, and in some cases pale fœtid stools, the primary derangement is to be found in the pancreas. In such cases a prominent clinical feature is the occurrence of pain on deep pressure over the region of the head of the pancreas.

II. In some cases of neurasthenia a marked pancreatic reaction is present in the urine. We have at present no data enabling us to determine whether this pancreatic disturbance is a result or a cause of the neurasthenic state.

Treatment.—In the early stages of the disease the inflammation subsides under simple remedial measures. The diet should be a light one and in cases where gastric symptoms are present an exclusive milk diet may be advisable for some days. Small doses of calomel frequently repeated, followed by a morning saline for two or three days, act beneficially in promoting a healthier state of the liver and small and large intestines. Where constipation is present, as it often is, one or more enemata may be called for. The pain may be relieved by icebags, hot fomentations, or, if necessary, subcutaneous injections of morphine. The excretory functions of the skin should be stimulated by an occasional Turkish bath, provided always that due care is taken in recommending such a measure and explicit instructions given with regard to the necessary details. In the later stages the same rules apply. The diet should be carefully attended to, three meals a day at long intervals, sugar and starches being restricted, protein foods forming the staple of the dietary. With regard to drugs, in addition to calomel much value attaches, in my opinion, to lacto bacilline in the form recommended by Metchnikoff. An improvement in the state of the intestinal excretion may be rapidly attained and is shown in the character of the stools, which become formed and free of offensive odour. A course of intestinal irrigation has value in the same direction. In these cases it is of even greater importance to promote the functions of the skin and kidneys by appropriate baths and occasional diuretics. I have seen no decided benefit from the use of pancreatic extracts.

In cases which do not respond to medical treatment surgical measures are called for. The operations recommended by authorities are: 1. Laparotomy and free manipulation of the gland. I have shown you this evening a patient who has greatly benefited by this operation. In all probability the favourable results of this operation are attained by the loosening or breaking down of adhesions and consequent relief of tension. In some cases it is possible that the free manipulation of the parts has dislodged a minute calculus obstructing the orifice of the main duct. In most cases, however, a more radical operation is recommended—either (2) cholecystotomy, simple drainage of the gall-bladder, or (3) cholecystenterostomy, permanent drainage of the gall-bladder into the intestines.

The advantage of the simpler operation lies in the fact that it gives an opportunity for the bile to find its way into the intestines by the natural route should the pancreatic swelling eventually subside; cholecystenterostomy, on the other hand, has the advantage of removing the necessity for a second operation should the pancreatic obstruction fail to subside. A large number of cases are now on record where recovery has followed the operation. In some of these cases the condition of the patient at the time of operation has been a very serious one, the state of the gland when seen and handled by the surgeon being clinically indistinguishable from malignant disease, the patient's recovery, however, establishing the diagnosis of chronic pancreatitis. An increasing familiarity with the clinical features of pancreatitis will lead, it is to be hoped, to earlier diagnosis and to successful operative treatment in a class of case which is at present allowed to advance to such an extent as to prejudice the patient's power of recovery. (At the same time I might parenthetically add that a more intimate knowledge of the disease in its earlier phases might lead to the adoption of prophylactic measures which would render the services of the surgeon unnecessary.)

The question of when to operate is essentially one for the surgeon, and on this point I would only refer to two points which have presented themselves to me. The first of these is the inadvisability of delay in cases of chronic jaundice due to the presence of stone in the common bile duct. I have had the opportunity of examining the urine in two cases of jaundice in which the causation was not clear, the diagnosis lying betwixt gall-stones, malignant disease, or chronic pancreatitis. Examination of the urine gave in each instance a negative pancreatic reaction, but prior to the operation, which took place from two to three weeks later, a marked positive reaction was obtained, pointing to extension of the inflammation to the pancreas. At the operation the condition was in each case inflammatory, associated with impacted stone, and extensive adhesions, making the operation a very serious one. In both instances the patients died and it appeared to me that the chances of the patients' recovery may have been lessened by the extension of the inflammation to the pancreas.

The second point has reference to the question of operative treatment in cases unassociated with jaundice, in which the leading features are gastric symptoms, some general constitutional disturbance, a marked pancreatic reaction in the urine with perhaps occasional glycosuria. Mayo Robson and Cammidge have recently spoken strongly in favour of operation in such cases, their recommendations extending to several cases of a genuine diabetic nature. I have no experience enabling me to speak authoritatively on the results of operative treatment in these cases, but it appears to me that great caution is necessary in recommending these cases for operation. Medical measures will in many instances suffice to restore the patients and free them from the subsequent serious risks of diabetes. At the same time we must recognise the importance of early recognition from the surgical standpoint. It seems to me that increased knowledge of pancreatic diseases which must follow the careful study of recent literature of this subject will lead to a better appreciation on the part of practitioners both of the possibilities of medical treatment and of the advantages in suitable cases of early operative interference.

It only remains for me gratefully to acknowledge my indebtedness to my senior colleagues on the staff of the Royal Infirmary for the facilities afforded me in the examination of patients under their charge.

Edinburgh.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.[1]

SURGICAL SECTION.

How and Why the Surgeon should Attempt to Preserve the Appendix Vermiformis.

A MEETING of this section was held on Nov. 10th, Mr. J. WARRINGTON HAWARD, the President, being in the chair.

Mr. C. B. KEETLEY read a paper entitled, "How and Why the Surgeon should Attempt to Preserve the Appendix Vermiformis; Its Value in the Surgical Treatment of Constipation, with a Series of Cases briefly reported." He said that the surgeon should try to preserve the appendix vermiformis. The observations of Macewen had shown that it was not the physiologically useless organ it was supposed to be.[2] It had also a high surgical value as a channel of ingress to, and egress from, the intestine. Suitable cases for this use—viz., for the operation of appendicostomy—were numerous, varied, and frequently occurred in ordinary practice. They might be tabulated as follows: (1) colitis of various kinds; (2) certain forms of intussusception (chiefly to prevent recurrence); (3) intestinal hæmorrhage; (4) typhoid fever, and certain other cases in which enteritis occurred; (5) cases of enterectomy and colectomy (as a safety-valve); (6) intestinal distension in toxic conditions; (7) cases requiring the administration of nutrient enemata *per appendicem;* and (8) intractable constipation. In the opinion of Mr. Keetley transplantation of the appendix vermiformis so that the whole or the greater part of it from its root in the cæcum to near its tip lay permanently imbedded in the abdominal wall, would produce the good results of excising it and in many cases of appendicitis appendix transplantation should be preferred to appendicectomy for the following reasons: Appendicitis was a dangerous disease, not on account of the nature of the appendix but because of its usual position—i.e., its relation to the peritoneal cavity. Among the cases recounted by Mr. Keetley were some which showed how trivial a malady even perforative appendicitis became when the appendix was imbedded in the anterior wall of the abdomen. Many appendices were in a condition dangerous enough to require operation without the organ itself being as yet seriously damaged—e.g., a fairly healthy appendix containing a large concretion. Concretions, kinks, twists, and strictures could be removed or cured, sometimes with difficulty, sometimes with ease, without removing the appendix. After, however, removing a concretion by what might be termed "appendicotomy," and after undoing a kink, foresight and prudence demanded that the appendix should be transferred from the peritoneal cavity. After removing kinks and twists non-recurrence was insured by transplanting the appendix. The cure of stricture by catheterisation absolutely demanded transplantation in order that the stricture might remain accessible. Examples of all these conditions were given in the cases reported by Mr. Keetley. He also considered that a further reason for preserving the appendix was the possibility of the truth of a part, if not the whole, of Professor Metchnikoff's teaching as to the evil influence of the bacteria of the large intestine in hastening the changes characteristic of old age. Through the appendix vermiformis the large intestine could be regularly washed out from end to end. Some of Mr. Keetley's cases illustrated that practice extended over several years, apparently with great benefit. In conclusion, Mr. Keetley said that appendicostomy was, on the whole, the best and most generally applicable surgical treatment of obstinate constipation because: (1) a long tube could be more easily and thoroughly washed out when open at both ends; (2) an appendicostomy gave direct access to the upper part of the large intestine; (3) medicines administered through it did not disturb the stomach and small intestine, while they reached the cæcum and upper part of the colon better than when given per rectum; (4) appendicostomy and appendix transplantation

[1] A report of the adjourned special meeting of this society which was held on Wednesday afternoon, Nov. 18th, will be found on p. 1544. The reports of the Clinical and Pathological Sections will appear next week.

[2] THE LANCET, Oct. 8th, 1904, p. 995.

prevented the cæcum from sinking into the pelvis; and (5) the value of appendicostomy in the treatment of constipation had now been demonstrated by experience.

Mr. L. A. BIDWELL said that he was not convinced that a kinked or perforated appendix was worth preserving in the anterior wall of the abdomen. The cases of intractable constipation which he had seen treated by Mr. Keetley's method had done well.

Mr. J. P. L. MUMMERY pointed out that there were many cases of constipation in which appendicostomy was the ideal operation but there were many cases in which it was useless, therefore the cause of the constipation must be sought for.

Mr. S. G. KIRKBY-GOMES referred to the value of appendicostomy in the treatment of chronic constipation.

Mr. W. G. SPENCER described the appendix from a developmental point of view as nothing more than a shrunken tip of the cæcum and could not see how such a remnant could perform any important function.

Dr. A. F. HERTZ contended that it was easier to wash out the colon from the rectum than by means of an appendicostomy.

Mr. R. P. ROWLANDS urged that in the treatment of appendicitis it was better to remove the appendix than to leave it in an inflamed and sloughing condition in the abdominal wall.

Mr. H. F. WATERHOUSE said that appendicostomy would be in the future the operation in cases of ulcerative colitis and in most cases of mucous colitis.

Mr. KEETLEY in his reply, referred to the teaching of Sir William Macewen on the function of the appendix. Concerning the washing out of the colon he maintained that it was best done by means of appendicostomy, and he said that to leave the stump of an appendix in the peritoneal cavity was as dangerous a proceeding as imbedding the organ in the anterior abdominal wall.

EDINBURGH MEDICO-CHIRURGICAL SOCIETY.

Leptothrix Infection.—The Diagnosis and Treatment of Pancreatic Disease.

IN the account of the inaugural meeting of this society on Nov. 4th, which was published in the last issue of THE LANCET, we were obliged to hold over the reports of papers read by Mr. E. W. Scott Carmichael and by Dr. D. Chalmers Watson with the subsequent discussions.[1]

Mr. CARMICHAEL, who took for his subject "Leptothrix Infection: a Case of Pyæmia with Meningitis, and Notes of Two Similar Cases," said: "In April, 1906, in consultation with Dr. T. Thyne, I saw an infant, aged four months, who had suffered from gastro-intestinal symptoms for a fortnight. Two days previously the child began to suffer from abdominal pain, which suggested to Dr. Thyne the possibility of peritonitis. The abdomen was swollen, tympanitic, and rigid, the child presenting locally all the symptoms of general peritonitis. The general condition of the child, however, was not such as one would associate with a general peritonitis due to the more common pyogenic organisms. The abdomen was opened, and general peritonitis, evidently of some duration, was present. The pelvis was full of a somewhat serous pus, and there were dense adhesions between the coils of intestine. These were especially so around the cæcal region, so that no attempt was made to find the appendix. Multiple drainage was used for the pelvis and lumbar regions. The child made an uninterrupted recovery and was dismissed some weeks afterwards completely cured. An ischio-rectal abscess developed a month later but since then the child has been in good health. The pus from the abdominal cavity was submitted to bacteriological examination. Mr. Richard Muir reported that the infection was a mixed one but that the predominant organism was a leptothrix probably of intestinal origin. The interest of this case lay in the fact that the child was very young (four months) and recovered after an attack of generalised acute peritonitis. The child was never so seriously ill as might be expected in a case of generalised peritonitis and has since been in good health. Recently it has been my good fortune to meet with another case. I am indebted to Dr. James Ritchie and Dr. Stuart Macdonald for the pathological and bacteriological investigations of the case. A child, aged 18 months, was sent by Mr. J. T. Dickie to Dr. John Thomson's ward on May 6th, 1908. The child had been ailing for about ten days with gastro-intestinal symptoms. Two days before admission to hospital swelling appeared in the right lower limb. Dr. Thomson asked me to see the case with him. There was general œdema of the limb up to the lower third of the thigh. There was no redness or inflammation, except for a small area of about the size of a shilling in front of the external malleolus. The temperature was 104° F. The diagnosis lay between an acute osteo-periostitis of the tibia or fibula and a subcutaneous œdema of septic origin. The child, though ill, was not so bad as to lead one to suppose that there was disease of the bone, and the absence of redness and the general appearance of the limb were not characteristic of acute osteomyelitis. There was no localisation of the swelling. The knee- and ankle-joints were freely moveable without pain, although they participated in the œdema. Although the clinical symptoms were against osteomyelitis I did not feel justified in not exploring the bones of the leg. Incisions were made down to the bone over the tibia and fibula, but except for a general œdema of the subcutaneous tissues there was no evidence of more deep-seated inflammation. The reddened area was incised and a small pocket of pus was found under the common extensor tendons in front of, and independent of, the ankle-joint. This was examined bacteriologically by Dr. James Ritchie. The child's condition continued much the same for the next three days, the temperature remaining persistently about 103° F.; the general condition, however, was well maintained. Bier's treatment with the Sang-apparat was carried out during this period. Discharge from the right middle ear with bilateral swelling of both elbows was then noticed. The joints were markedly distended, but there was no redness or sign of inflammation or marked local rise of temperature. Both joints were drained and contained a large quantity of thin odourless and rather pale cream-coloured pus. These were again examined bacteriologically by Dr. Ritchie. The child's condition became distinctly worse. There was very little discharge from the joints, much less than is present in streptococcal or pneumococcal affections. The child lived for a week longer with continued high temperature. Two days before death there was some swelling of the cervical glands. Lumbar puncture was performed and a turbid fluid was drawn off which was examined bacteriologically. What struck me clinically about these cases was that the general condition of the child in each case was not gravely affected while the leptothrix infection was localised. In the case of the first child, though young, the recovery was complete. In the second child, though there was high temperature, the general condition remained fairly good until there was general systemic infection, as shown by the otitis media and the double elbow-joint affection. A corresponding infection of streptococcal or staphylococcal origin gives rise, as a rule, to more systemic derangement. The œdema of the leg was not associated with any redness. There was no evident active inflammatory change. The condition of the limb resembled much more that of œdema of cardiac or renal origin than that due to an inflammatory state. I have seen from time to time in the out-patient department children brought up with a similar œdema of the hand and forearm, unassociated with inflammatory change. In one case I made an incision and endeavoured to cultivate an organism but with negative result. On looking back on these cases I cannot but think that they may be of similar origin. The œdema often persists for a week or two without affecting the general condition of the patient to any marked degree and then gradually subsides. One has considered these often of a mild streptococcal nature without being able to grow such an organism. The want of local inflammatory reaction was markedly seen in the case of the elbow-joint swellings. It is unlikely that these had been overlooked for more than a day or two but the appearance much more resembled that of a tuberculous affection. It was not like an acute arthritis due to the more common pyogenic organisms. The pus was thin, odourless, and of a pale creamy colour. In the abdominal case it was thin and more serous, odourless, much more like the fluid of a pneumococcal condition. The organism if it is the cause of these conditions does not appear to be an acutely virulent one but can lead

[1] THE LANCET, Nov. 14th, p. 1447.

to a general pyæmia as shown in the last case. These cases, however, seem to show that the organism is generally associated with other organisms such as the pneumococcus. The following post-mortem and bacteriological report was made by Dr. James Ritchie and Dr. Stuart Macdonald:—'Case 2.—There was a purulent subdural meningitis over the left hemisphere, a purulent pia-arachnoiditis in patches over the surface of the brain, and spinal meningitis about the lumbar cord. From the abscess in front of the ankle-joint, the elbow-joints, cerebro-spinal fluid, and peripheral blood a Gram-negative bacillus was obtained in long filamentous forms. It was motile, grew on all media, did not liquefy gelatin, and somewhat resembled the typhoid bacillus in its characters, giving a slight acid reaction in milk and glucose. There was in the case evidence of a terminal pneumococcal infection. The bacillus was pathogenic to monkeys and mice, very slightly to guinea-pigs and apparently to rabbits. It appears to break down the resistance of the animal to other pathogenic organisms. The importance of the case seems to rest in the production of the pyæmic process by a probably hitherto undescribed organism.' Dr. John Thomson and Dr. J. S. Fowler have kindly permitted me to refer to two cases (Cases 3 and 4) under their charge, the bacteriological findings in each case being similar to those above recorded. Without referring at any length to these cases I may say that they presented the symptoms and course of a post-basic meningitis. In Dr. Fowler's case head retraction appeared one week after the onset of the illness, which was ushered in with vomiting. Lumbar puncture on six occasions was performed and indefinite diplococci were found. The child was treated with Flexner's serum but died five weeks after admission to hospital. The bacteriological examination in these cases, carried out by Dr. Stuart Macdonald, gave a similar finding to that described fully in Case 2."—Dr. ALEXANDER BRUCE said that evidently this was a new disease which had to be added to clinical medicine. There was no reason to suppose that the organism was in a temporary stage. It was probable that infection might spread from the abdomen along the line of lymphatics which accompanied the nerves to the spinal cord.—Dr. J. S. FOWLER said that the meningitis differed from ordinary post-basal meningitis by the clonic spasm which it induced.—Dr. GEORGE ROBERTSON alluded to a branching streptothrix which he had observed in a case which was under his care and which exhibited many of the symptoms of general paralysis.—Dr. CHALMERS WATSON read a paper on the Diagnosis and Treatment of Pancreatic Disease. (The paper appears *in extenso* at p. 1519 of our present issue.)—Dr. J. O. AFFLECK said that there was a great difficulty in diagnosing diseases of the pancreas from diseases of the liver and many cases of supposed pancreatic disease had been shown by post-mortem examination to have been hepatic. Cammidge's test was one not easily applied by the general practitioner and Dr. Watson seemed to rely greatly on this test as a means of diagnosing pancreatic disease. Whether it could be taken as an absolute test of disease of this organ was very much open to question, as the test might give a reaction in other diseases. He thought that a good deal more research was required before one could arrive at an easy diagnosis of pancreatic disease. He desired to emphasise the grave responsibility the physician incurred in recommending exploratory operations which were not without risk. Dr. Affleck did not suppose that many, if indeed any, physicians in Edinburgh had had more of these operations performed for patients, and it was not without reason that he regarded the physician's part as a very important and a very serious one.—Dr. WILLIAM RUSSELL agreed with Dr. Affleck that the value of the communication lay in the large number of observations carried out with Cammidge's test. The subject of pancreatic disease was a very wide one and for the present the severe affections such as acute pancreatitis might be set aside. During the past 20 years or more there had been two periods when diseases of the pancreas were boomed. During the first, "pancreatic dyspepsia" was the fashionable diagnosis; during the second it was "amylaceous dyspepsia," and many people had it. It had to be remembered that the pancreatic juice was the most important of the digestive fluids, for it contained three powerful ferments. The pancreas was quite different from the liver, the one being a secretory, the other an excretory gland. Primary disorders of the pancreas with an anatomical basis were rare and the clinician was not entitled to assume the existence of conditions that those who had looked into the matter did not recognise. On the other hand, every chemical pathologist knew how the pancreatic secretion could be secondarily affected. Cammidge's test if it meant anything implied that pancreatic secretion was absorbed and excreted by the kidney. It was well known that in duodenitis, in gastro-enteritis, and in simple enteritis the catarrh affected the flow of the pancreatic juice and therefore influenced the whole process of digestion. A duodenal catarrh was sufficient to account for catarrhal jaundice and for the interference with the pancreatic flow which would lead to a positive urine reaction under such conditions. In some of the classes of cases referred to in the paper the differential diagnosis could be made without this test, and indeed the test could not possibly be of assistance in many cases where a differential diagnosis was of great importance. He thought Dr. Watson placed too high a value on the test, but the paper would lead him (Dr. Russell) to go into the subject again although he had tried it early and discarded it.—Mr. C. W. CATHCART, Mr. CARMICHAEL, and Dr. FRANCIS D. BOYD took part in the discussion.—In his reply Dr. CHALMERS WATSON said that the physiology of the test was as yet not known. The actual performance of the test was not easy and he had himself failed in trying it until he had had a practical lesson by the inventor. He said that the test was not pathognomonic of pancreatic disease. He believed that pancreatic disturbances were much more widespread than was supposed, and this his observations had proved. In the majority of cases this test was not essential in the diagnosis of pancreatic disease, but it ought to be taken in conjunction with other methods of investigation.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

SECTION OF SURGERY.

Presidential Address.—Exhibition of Cases.

A MEETING of this section was held on Oct. 30th, the PRESIDENT, Mr. JOHN LENTAIGNE, being in the chair.

The PRESIDENT, in opening this the twenty-sixth session of the Surgical Section of the Royal Academy of Medicine in Ireland, said he had come to the conclusion that the most appropriate subject with which he could deal was the present condition and future prospects of the Academy. He could remember the wave of enthusiasm that spread over the profession 25 years ago when the Academy was founded by the amalgamation of the existing medical, surgical, and pathological societies. The zeal and enthusiasm that were excited produced rapid and remarkable effects in crowded meetings and papers so numerous that many could not be read. He could remember also how the wave of enthusiasm abated and how apathy and loss of interest grew until now the society had, in his opinion, reached the lowest possible ebb, and the prospects of the future were of the very worst. Unless a very great change took place decay and dissolution were inevitable. He had no desire to bolster up an effete or useless institution and if the Academy was of no value to science in Dublin then the sooner it was decently buried the better. He, however, asserted most emphatically that the Royal Academy of Medicine was a necessary and valuable asset to the scientific life of Dublin and it would be their own fault if they allowed it to dwindle into worthlessness as compared with similar institutions in London, Paris, and Vienna, or even in the smaller continental cities, such as Lyons, where societies like theirs were doing work of the most valuable kind for the entire world. In Dublin there were plenty of material, plenty of brains, and plenty of most excellent work being done, and they must make an effort to prevent its being wasted to the world as well as to the individuals themselves. He had summed up the causes of decay under three heads. The first was the apathy of the senior members of the profession. Allowance had, of course, to be made for overworked medical men advancing in years who had difficulty in coming out in the evening to hear papers on matters which they might possibly think of very little use to them. Still he thought public spirit should induce a man to support an institution that had once been of use to him, and there were very few senior members of the Academy who had not gained from it. There was no man

who knew so much as to be beyond learning. He did not preach to them from any lofty pedestal of virtue. He had been slack in attendance and in the exhibition of work, partly from discouragement and partly from the usual causes which seemed to sap the energies of the seniors. But the responsibilities of office had made him reconsider the matter, and to decide to do his best to remedy the condition and to make others assist in doing so. The second cause of decay was the medical clubs—biological and clinical. They had come to stay and flourish, and long might they flourish. In proper circumstances they were distinctly helpful to the scientific life of Dublin, but they had exercised a pernicious influence in ways which it was easy to understand. There was no publication of work done by them. Men could discuss their cases in a free-and-easy way without committing themselves to statements which would be published. The clubs should be of special value as preparers for the Academy, and they should try to persuade members of the clubs of the great value of bringing their specimens and papers subsequently to the Academy. The third cause of the decay was the evil system of hospital appointments in Dublin, which had indeed existed at the foundation of the society. He alluded to the absence of proper apprenticeship for the profession. Men were often run into hospital appointments fresh from the schools without any training as an assistant or a registrar, or both, that they should have had. In some hospitals the assistant surgeon was merely a drudge to do the extern work instead of an assistant to a senior. In others he was at once put in charge of beds and given the responsibilities of a senior. Such a system resulted in immature surgeons who, from a consciousness of their own deficiencies, were afraid to speak in a place like the Academy; or it might result in over-confidence which would some time lead to a ludicrous mistake that would prevent them from entering into contest with others again. There were, however, he was glad to say, indications of improvement. Some hospitals now had real assistancies and registrarships and he had good hopes of them. The impetus to scientific zeal that must ensue from the establishment and endowment of the new university must also result in good work. He was, therefore, more hopeful than when he began to consider the question, and he would ask them all to endeavour to insure that the Academy would in the future not only rival the best work of the past but far surpass it, with lasting benefit to Irish surgery.

Mr. E. H. TAYLOR exhibited a woman who went to hospital for relief of Pain in the Left Shoulder. On examination a hard swelling was detected in the posterior triangle of the neck, which was diagnosed as a cervical rib. This was confirmed by a skiagraph, which showed a well-formed cervical rib on the left side and a smaller incomplete rib on the right. The patient did not present the nervous and vascular disturbances which were frequently found associated with the presence of cervical rib.—Dr. W. S. HAUGHTON said that in close on 8000 examinations with x rays he had only come across four similar cases.—Mr. A. J. M. BLANEY said he had shown some time ago a similar case, in which the whole of the forearm was blue, with pains shooting down to the fingers. The pulse was quite lost. The removal of the rib was easy; the result was a cessation of pain.—Mr. W. I. DE C. WHEELER said it was remarkable that the symptoms in such cases seemed to come on in adult life.

Dr. HAUGHTON showed a boy, aged six years, suffering from Multiple Rickety Deformities, some of which had been treated by operation. On admission to the Orthopædic Hospital, amongst other deformities, he had considerable anterior curves on both tibiæ, double genu valgum, and severe curves of both radius and ulna of the left arm, limiting flexion and preventing pronation and supination. Skiagrams were shown demonstrating these conditions before and after treatment. Cuneiform osteotomy was first performed in the left tibia, the necessary wedge of bone to be removed being first accurately measured by placing the legs of a pair of compasses on the skiagram—one leg in the normal axis of the tibia, the other leg of compass along the axis of the lower end of the deflected portion of bone. The angle of deformity thus accurately measured was recorded by cutting a piece of aluminium to this angle. This formed a "sterilisable template," which when laid on the exposed surface of the tibia could be outlined by two cuts on the periosteum. By following these lines with a saw or chisel a wedge of bone would be removed the angle of which truly represented the "angle of deformity." The deformity was then forcibly reduced and apposition of the bones maintained in plaster-of-Paris. The double genu valgum was treated by "double condylotomy" at two sittings—"plaster-of-Paris" being applied in each—and the child was kept in bed for a prolonged period. Movements of the knee-joints were now good and the child, though not encouraged to walk much yet, could, nevertheless, walk with ease. The forearm Dr. Haughton proposed to treat also by osteotomy.—Mr. D. KENNEDY said that in children before four years of age he had frequently bent the bones into position with almost perfect results. The after-treatment of such cases had to be carried out for a lengthened period, otherwise relapse was bound to occur.—Mr. TAYLOR said he had always performed Macewen's supra-condyloid osteotomy which fulfilled the conditions of the case admirably.—The PRESIDENT commended Dr. Haughton's device for calculating the angle of deformity which would do away with the time lost in making repeated sections to get the bones to fit.—Dr. HAUGHTON, in reply, said his experience was that in cases where, in the dispensary, they thought they could obliterate the curves by straining movements the bones became so hard after six weeks of good feeding in the hospital that they could not be bent any more. In supra-condyloid osteotomy the angle of deformity was corrected but another deformity was produced. However, if the child was well fed and the limb was kept in plaster-of-Paris that method would give as good results as the other.

Mr. KENNEDY exhibited a patient on whom he performed the intra-scapulo-thoracic amputation for an extensive Injury of the Arm, due to a railway accident. The scapula was comminuted and the soft parts of the arm mangled and torn so high up that it was impossible to get covering for an amputation through the shoulder-joint. The operation was performed within two hours from the time of the accident. Mr. Kennedy attributed much importance to immediate operation in such cases.

Mr. LOUIS A. BYRNE exhibited a man, aged 21 years, who was admitted to Jervis-street Hospital on Saturday, Nov. 2nd, 1907, suffering from an Injury to his Head. The patient made the following statement. A short time previously he was "tricking" with a fellow workman and threw a dirty bag in his face; the other lost his temper, took up an iron bar, and struck him on the head. He fell to the ground; the ambulance was sent for, he was taken to hospital, and put to bed. On examination there was a slight swelling over the right parietal region, a very slight scratch; no other mark. His pupils were normal and responded to light. His senses were not impaired. The respirations were 20; there was no nausea or vomiting; the temperature was 98·4° F., and the pulse was 60. Finding the pulse so low Mr. Byrne decided to take him into the theatre and under an anæsthetic to dissect back the scalp and examine the skull, which he accordingly did, and found a gutter fracture extending about two and a half inches, the depression being most marked. He trephined the upper fracture at its anterior margin and elevated it but was unable to elevate the lower one. He then had to trephine the lower one in its posterior margin and successfully elevated it, but immediately very severe hæmorrhage took place which necessitated the plugging of the wound with iodoform gauze. He then covered the wound with gauze and had the patient at once removed to bed, where he made an uninterrupted recovery and was discharged on Jan. 4th, 1908. He returned to his work and has continued at it ever since and has not complained of any trouble.—Mr. TAYLOR said he thought that the hæmorrhage was meningeal. The probability was that until the bone was elevated the middle meningeal artery was compressed in some way, and when the bone was elevated the artery, which probably had been torn, started to bleed vigorously. In using a small trephine there was danger of wounding the artery.

Mr. GRAVES STOKER exhibited a woman whose arm he had amputated for Gangrene due to Acute Cellulitis. The patient received a small wound which became infected and gangrene set in two days after her confinement. She was in such an exhausted condition then that he did not consider operation advisable. The gangrene continued to spread for some days, but eventually some signs of a line of demarcation made their appearance. Amputation was performed on the tenth day after her confinement and she made satisfactory progress thereafter. Notwithstanding the virulence

of the infection of the arm the uterus remained unaffected.—The PRESIDENT said it was a most remarkable case because of the absence of uterine sepsis with the terrible infection in the upper limb, and because of the exceptional success of the result.—Mr. WHEELER said that he had a similar case in which tetanus supervened but the patient recovered. Where tetanus was likely, he thought the antitoxin should be given the whole way through, but the PRESIDENT said he had lost faith in antitetanic serum.—Mr. KENNEDY, Mr. HAUGHTON, and Mr. W. TAYLOR also spoke.—Mr. STOKER, in reply, said he had taken the line that when the woman was not losing any ground it would be better to delay the amputation a few days from the confinement, as she had been working hard and had not been well fed.

GLASGOW MEDICO-CHIRURGICAL SOCIETY.—A meeting of this society was held on Nov. 6th, Dr. T. K. Monro, Vice-President, being in the chair.—Dr. A. G. Hay showed a case of Traumatic Paralysis of both Suprascapular Nerves caused by falling on the palms of the hands with the arms extended forwards. The supra- and infraspinati were atrophied and the shoulder-joints were painful; the arms could not be raised above the shoulder level or pressed firmly against the sides. The affected muscles reacted sluggishly to faradic and normally to galvanic stimulation. There were no sensory changes.—Dr. W. K. Hunter showed: 1. A case of Pure Motor Aphasia in a healthy man, aged 62 years. The condition came on suddenly at night. Four years before he fell down in the street and remained unconscious for half an hour but was able to walk home shortly afterwards. Six months ago he suffered from "cardiac spasms" but nothing abnormal was made out from examination of the heart. He had a facial paralysis lasting for from 24 to 48 hours but his inability to speak had remained absolute for three weeks. He could only say "yes" and "no," and "John." He tried to say the days of the week and made seven separate sounds which had a certain rhythm resembling the words. He could write well and understood everything said to him. His mental condition was quite acute. The condition seemed most likely to be due to a thrombosis. There was no cardiac condition to account for embolism and the blood pressure was too low to suggest hæmorrhage (105–120). 2. A case of Little's Disease in a child, aged three and a half years. There was a history of a difficult labour and artificial respiration had to be performed for half an hour. He had not learned to walk or to talk, though he seemed to understand what was said to him. There was no rigidity about the muscles.—Dr. R. Barclay Ness described: 1. A Fatal Case of Hodgkin's Disease in a man, aged 41 years. In childhood he had tuberculous cervical glands, and when aged 29 years the glands in the right axilla became enlarged and six years later those of the right side of the neck. A few months ago the glands of the left side of the neck and axilla and of the right groin rapidly became enlarged. There was some œdema of the right side of the thorax. Cachexia was marked, but there was no bronzing or jaundice. The spleen was considerably enlarged. Dyspnœa was marked and there were left-sided pleural effusion and ascites. Dr. John H. Teacher in a pathological report said that on section the appearances presented suggested a tumour rather than Hodgkin's disease. The glandular enlargements were quite characteristic of the latter, but the involvement of the liver and spleen took the form of a few large, rounded masses exactly resembling secondary carcinomatous tumours. There was, moreover, perforation of the trachea and œsophagus by the new formation and there were numerous small superficial growths on the peritoneum which were very suggestive of metastatic growths due to invasion of the cavity. The histological characters of all the growths were those of lymphoma or Hodgkin's disease. There had been a very old tuberculous infection of the lymphatic system and lungs which was represented by numerous calcareous masses. There was no recent tubercle. Tubercle bacilli could not be found. 2. A case of Carcinoma of the Stomach in a boy, aged 14½ years. There was a history of abdominal pain for two years and of jaundice of two months' duration, also of a small umbilical tumour of three to four months' duration. Hæmatemesis was present on two occasions; melæna on one occasion. There were considerable tympanitic distension and tenderness. The abdomen was opened by Dr. Alexander MacLennan, fluid drained off, and an anastomosis made between the distended gall-bladder and jejunum. The nature of the case was made out after examination of the tumour mass removed. Dr. Teacher in a pathological report said that the primary lesion in this case was an ulcer, very like a simple chronic ulcer of the stomach, but with unusually thick edges and much diffuse thickening around it, situated on the lesser curvature about two inches from the pylorus. The thickening extended fully an inch from the edge of the ulcer, so that there was a clear strip of stomach between it and the pyloric ring. There was very widespread lymphatic dissemination involving the adjacent lymphatic glands, the gall-bladder and common bile duct, and the omentum and mesentery. The two last-mentioned structures were studded with small nodules. Microscopically the tumour was a very hard scirrhus carcinoma. The epithelial processes were very fine and had disappeared almost entirely from much of the tumour. A few traces of glandular structure persisted, showing clearly its gastric origin. It appeared probable that it developed upon a chronic gastric ulcer.—Dr. J. S. McKendrick reported a case of possible incipient Addison's Disease. The chief features of the case were: pigmentation of the skin with patches of white, consolidation of the left apex, expectoration with tubercle bacilli, anæmia, and enlarged spleen. The blood count was normal. Dr. McKendrick discussed the question whether this was a case of disease of the suprarenal capsules with secondary involvement of the lung and splenic anæmia or whether it was a case of Addisonism. The patchy nature of the pigmentation appeared to resemble that in cases recorded of leucodermia associated with Addison's disease.

MANCHESTER MEDICAL SOCIETY.—A meeting of this society was held on Nov. 4th, Dr. A. T. Wilkinson, the President, being in the chair.—Mr. Garnett Wright described two cases of Traumatic Rupture of the Spleen. The first case was that of a woman, aged 35 years, who sustained a rupture of the spleen as a result of a kick in the abdomen. Slow hæmorrhage occurred and operation was performed 48 hours after the injury, the hæmorrhage being controlled by gauze tampons. The patient recovered. The second case was that of a child, aged two and a half years, who was run over and presented signs of internal hæmorrhage. Operation revealed a tear right through the spleen. Splenectomy was performed but the child died 10 hours later. Mr. Wright advocated a vertical incision through the right upper rectus muscle with a second incision running transversely to the left from this. In this way not only was good access to the spleen obtained but other organs could be examined. Tamponade was advocated in selected cases and splenectomy advised in the more severe injuries.—Dr. Charles H. Melland read a paper on the Diagnosis and Treatment of Severe Anæmia, with special reference to the differential diagnosis and treatment of pernicious anæmia. He drew attention to the main features of difference between pernicious anæmia and other severe anæmias of secondary origin, laying particular stress upon the difference in the character of the blood, and illustrating them by means of a number of microphotographs of blood films. He referred to the various underlying causes of severe anæmia and to the importance of making use of every method of physical examination in order to arrive at the cause of the disease, and the danger of relying upon the blood examination alone, since rational treatment could only be carried out if the cause had been sought for and discovered. He regarded the common view as to the prognosis of pernicious anæmia as much too pessimistic and liable to paralyse one's attempts at treatment. There was none, in fact, of the more serious diseases which responded more satisfactorily to prompt and efficient treatment. If recognised early some cases might be actually cured, whilst others might have several years of fairly comfortable life insured to them. He showed microphotographs of the blood from cases which had been greatly ameliorated or cured. Arsenic was still the most useful drug but it was useless unless given in increasing doses and its effect must be watched and guarded by periodic blood examinations. Oro-gastro-intestinal antisepsis was of almost equal importance, and, like the arsenic, must be kept on in a minor degree long after apparent recovery, the dose being increased if the blood examination showed any tendency to relapse. He had found raw red-bone-marrow effective as an adjuvant in some cases that were proving refractory to the other

methods of treatment.—Mr. Henry Wilson and Dr. E. Vipont Brown described cases of Malignant Disease treated by Trypsin.—The following were Mr. Wilson's cases:—1. Lympho-sarcoma affecting the cervical glands; first noticed June, 1906. After six months' treatment with hypodermic injections of trypsin and amylopsin the glands were much reduced in size and were now freely moveable. The patient was now in good health and able to earn his living. 2. Scirrhus of the breast. Excision (axilla being cleared out) Feb. 11th, 1906. Recurrence in cicatrix September, 1906. Multiple secondary growths appeared shortly after. There were acute pain, rapid wasting, and loss of strength. The patient was dependent on morphine. Trypsin treatment was commenced on Feb. 17th, 1908. In a month the patient was almost free from pain and did not require morphine; she slept well, the appetite returned, and she gained weight and strength. This improvement was maintained for five months; then, in consequence of discomfort caused by the injections, further treatment was refused and the patient was now going downhill. At no time during the treatment could any local improvement be detected.—Dr. Brown said that the first case which he had to mention was one of stricture (almost certainly malignant) of the œsophagus in a man aged 69 years. The treatment was commenced on May 25th and was followed by immediate improvement. Squire's preparations were used, a teaspoonful of their liquor pancreaticus fort being taken half an hour before each meal and one "sterilette" being injected every day. Three months after the commencement of the treatment a full-sized stomach tube passed into the stomach without any apparent resistance. Then the patient suffered from bronchitis, cystitis, and kidney trouble and the treatment was discontinued, with a consequent return of the stricture. He seems again to be responding to the treatment. The second case was one of carcinoma of the cervix, so severe as to be inoperable, in a woman, aged 56 years. The treatment was commenced on August 1st. In addition to the injections of Squire's "sterilettes" he also applied pledgets of wool soaked in Squire's lotio pancreaticus fort to the growth. Within a week it was evident that the growth was being dissolved away whilst the healthy tissues remained unaffected. Soon there was a large cavity to pack until the cervix was represented by a cavity continuous with the vagina, the examining finger passing directly to the internal os. There still remained much thickening around. The patient unfortunately was an alcoholic and drank herself almost to death during the treatment. She was still under care. There was no smell and very little pain.

FORFARSHIRE MEDICAL ASSOCIATION.—A meeting of this association was held on Nov. 5th, Dr. R. C. Buist being in the chair. — Mr. A. Don showed a patient upon whom he had operated for Abscess of the Liver and subsequently read notes on the case.—Dr. J. Mackie Whyte showed a young girl, aged nine years, with a chancre on the upper lip.—Dr. J. S. Y. Rogers showed a boy, aged 11 years, with well-marked and Complete Unilateral Hypertrophy of the Left Side, the head, face, arm, and leg, hard and soft parts, being involved in the condition.—Dr. G. F. Whyte showed a mother and child with Abnormal Thumbs. Several other members of the family had similar affections. X ray photographs were exhibited which showed the abnormality to consist of a long thumb, with three phalanges, as in a finger. —Mr. D. M. Greig showed a boy, aged 10½ years, with Neuro-fibromatosis. A large tumour had been removed from the back below the right scapula which was found to consist of neuro-fibromata. Scattered all over the body just under the skin were numerous elongated nodular masses which felt like atheromatous vessels, or "pieces of ipecacuanha root."—Professor A. M. Stalker exhibited the specimen of a Heart from a case of Slow Cardiac Death. The left auricle was filled with a hard striated clot firmly adherent to the walls, with a very narrow passage in the centre through which the blood passed. When first seen the patient, who had cerebral embolism, was at a very low ebb, and death appeared imminent, but he lingered on more dead than alive for several days. Professor Stalker also showed two specimens of Ulcer of the Stomach.—Dr. Buist exhibited a Four Months' Fœtus in which death had been caused by the umbilical cord passing under the right knee, then round the thigh and leg and thus constricting the part under the knee. He also exhibited an infant in whom, when born, the heart was found beating on the right side and there was dulness all over the chest. This was found post mortem to be caused by a diaphragmatic hernia, the whole contents of the abdomen with the exception of the liver and stomach being in the left side of the thorax.—Dr. Mackie Whyte read notes on a case of Aneurysm of the Descending Thoracic Aorta, which occurred in a man, aged 43 years, a baker by trade. For 12 weeks he had vomited about half an hour after food, this being followed by severe pain in the chest. He had lost flesh steadily and was very thin on admission. There were limited movement of the left side of the chest and dulness over the left lung behind from the mid-scapular region downwards, extending to the right border of the vertebral column. Over the whole left lung there were resonant and dull areas, and there was a striking absence of breath sounds and voice conduction. The heart was normal in size, there was an accentuated second sound in the aortic and pulmonary areas, there were no murmurs, the radial pulses were equal, and there was no thickening of the arterial wall. The pupils were regular. The condition remained unchanged for two months, except that the dulness increased towards the axilla and to the front of the chest. He lost weight steadily and died suddenly one morning. Post-mortem examination showed a large emphysematous right lung with old tuberculous nodule at the apex and a consolidated left lung with numerous small bronchiectatic cavities containing pus. The heart was normal; in the descending aorta there was a large irregular fusiform aneurysm with considerable secondary bulging which had ruptured into the anterior wall of the œsophagus four inches above the cardiac orifice of the stomach. The stomach contained a solid blood clot weighing 2¾ pounds.—Mr. Don read notes on a case of Intussusception of the Sigmoid caused by a Polypus. The patient, a woman aged 44 years, was admitted to the Dundee Royal Infirmary on Sept. 1st with prolapse of the bowel. On examination, the bowel was seen to protrude eight inches through the anus and at the apex was a polypoid mass. The lumen was patent and the bowel looked gangrenous. Chloroform was administered and partial reduction was made. As this was found not to be satisfactory the abdomen was opened and there was found to be an intussusception of the descending colon into the pelvic colon. This was reduced and a loop of bowel was sutured to the peritoneum and the skin, and the part with the tumour left outside, and two days later this was excised. On microscopic examination this was found to be an ordinary villous papilloma. The patient steadily improved and on Sept. 19th an attempt was made to close the opening. This proved to be difficult and tedious owing to the amount of the sigmoid which had previously been removed. On the night before the operation and also in the morning a hypodermic injection of one-quarter of a grain of morphine and 1-100th of a grain of hyoscine was given. This seemed to act well in preventing shock and lessening the quantity of chloroform required, only one ounce being used. The operation consisted in, first, a junction of the cut ends of the bowel by a lateral anastomosis and then a resection of the part of the bowel involved in the artificial anus. The patient made a satisfactory recovery. Mr. Don then read notes on a case of Abscess of the Liver upon which he had operated.

UNITED SERVICES MEDICAL SOCIETY.—A meeting of this society was held on Nov. 11th, Inspector-General R. Bentham, R.N. (retired), being in the chair.—Major C. G. Spencer, R.A.M.C., showed an officer, aged 43 years, who was convalescent after having suffered from a large single Tropical Abscess of the Liver which followed an attack of dysentery in February of this year. The abscess had been aspirated three times and the cavity injected with a 1 per cent. solution of quinine hydrobromate on each occasion. In all, 151 ounces of pus had been removed and 20 ounces of the solution injected. No living amœbæ could be found in the pus which was sterile on culture. The leucocyte count had been high throughout. The patient had gained more than 2 stones in weight and had recovered his normal health.—Captain L. W. Harrison, R.A.M.C., showed a gunner of the Royal Garrison Artillery who was suffering from kala-azar. The man had been stationed at Madras and had been brought into intimate contact with natives. The edge of the spleen extended three and a half inches to the right of, and three and a half inches below, the umbilicus. The temperature chart was shown and it illustrated the intermittent type of the pyrexia. The patient had marked leucopenia. The Leishman bodies had been recovered by

splenic puncture and Colonel W. B. Leishman, R.A.M.C., had succeeded in obtaining developmental forms by cultivation in Novy medium. Photographs illustrating the parasites as recovered from the spleen and the developmental forms obtained were shown. Treatment had consisted of soamin (gr. 3) by intramuscular injections, x ray exposure to the spleen, and hetol by intravenous injection. On the whole, the patient had improved somewhat, especially as regards his blood condition and temperature.—Captain J. C. Kennedy, R.A.M.C., showed two patients. The first was probably a case of functional paraplegia, but in the early stage of the disease it was thought that the man was suffering from locomotor ataxia and the diagnosis was still to some extent open. The second was a case of paralysis of the oculo-motor nerve in which the diagnosis lay between the ophthalmoplegic migraine of Charcot and a neuritis of rheumatic or influenzal origin. Captain Kennedy pointed out that the possibility of the existence of a nuclear paralysis should not be overlooked. —Major H. W. Grattan, R.A.M.C., showed photographs of a case of Elephantiasis.—Fleet-Surgeon P. W. Bassett-Smith, R.N., contributed two pathological specimens: (1) Aneurysm of the Heart; and (2) Diaphragmatic Hernia. There was a large rent in the diaphragm through which the spleen and portions of the stomach and transverse colon had been forced.

BRIGHTON AND SUSSEX MEDICO-CHIRURGICAL SOCIETY.—A meeting of this society was held on Nov. 5th, Mr. R. F. Jowers, the President, being in the chair.—Mr. A. H. Tubby read a paper entitled "Arthritis Deformans (Rheumatoid Arthritis), with a Notice of Recent Surgical Treatment." He divided arthritis deformans into three groups: 1. Still's disease, which occurred in children before the second dentition, and was characterised by swelling of the joints, enlargement of the lymphatic glands and spleen, and arrest of bodily development. As treatment he advised arsenic and good food. 2. Rheumatoid arthritis, occurring mainly in females between 15 and 30 years of age and at the climacteric, usually subacute. It began by hypertrophy of the synovial membranes, while the ends of the bones became atrophic and transparent to x rays. It was a disease of debility and might be due to septic absorption from the uterus, carious teeth, a rectal ulcer, or auto-toxæmia from the intestine. Any possible septic focus should be treated surgically, and any joint which was much swollen or very painful should be opened and washed out and any excrescences of synovial membrane removed. He strongly recommended lactic acid milk diet to combat auto-toxæmia, guaiacol, arsenic, and iron as medicines, and locally radiant heat. 3. Hypertrophic or osteo-arthritis, a disease of the latter half of life, beginning in the bones, which became eburnised and sclerotic, bony spurs and Heberden's nodes forming, while the synovial fluid was decreased and the cartilages eroded. Removal of excess bone would sometimes help these cases.—The paper, which will be published in an early issue of THE LANCET, was discussed by the President, Dr. Walter Broadbent, Dr. E. Hobhouse, Dr. D. G. Hall, and Mr. G. Morgan.

NORTH LONDON MEDICAL AND CHIRURGICAL SOCIETY.—A meeting of this society was held on Nov. 12th, Mr. G. B. Mower White, the President, being in the chair.—The President, in proposing that a letter of condolence should be sent to the family of the late Dr. James Grey Glover, spoke of the long association which Dr. Glover had had with the society and of the valuable services which he had rendered to it. One of the oldest members of the society, Dr. Glover had twice held the position of President. On the death of Dr. Syers at the beginning of the session 1906–07 the chair, to which he had been elected, became vacant, and Dr. Glover, with his accustomed unselfishness and at considerable personal inconvenience on account of his advancing years, very kindly stepped into the breach. All who heard the presidential address which he delivered at the close of the session on "The Outlook of the Medical Profession—Scientific, Social, Political, and Financial" will remember with pleasure the lofty ideals which actuated him and the hopeful view with which he regarded the future of the profession to which he was devoted. In conclusion, Mr. Mower White considered that Sir John Tweedy, in his "impressions of Dr. Glover"[1] had ably summed up his character when he said of his life work that it was the outcome of a fine and cultivated intellect, a just, generous, and religious spirit.—In seconding the motion, Dr. Alexander Morison spoke of his long and intimate acquaintance with Dr. Glover, and in a few touching sentences referred to his devotion to his work and to his kindly and generous disposition.—Dr. Morison then showed a case of Cerebro-spinal Meningitis in a child, aged five years, in whom marked improvement had followed the performance of lumbar puncture coupled with the injection of vaccine. He referred particularly to the good effect of drainage in these cases, where the symptoms are due to the intraventricular pressure. The child, who had been admitted to the hospital on Oct. 8th, was now practically well and was about to be sent home. Dr. Morison also showed a case of Heart Disease in a boy, in whom pain of a distressing and anginoid character was relieved by the performance of thoracostomy.—Dr. James Crabb showed a case of Developmental Imbecility in a boy, aged 13 years, in whom there were atrophy and defective movements of the tongue, due probably to a nuclear lesion in the medulla.—The President showed a specimen of an Abnormal Kidney removed by the abdominal route, and a case of Hallux Valgus cured by operation.—Dr. A. H. Pirie showed two cases, one of Idiopathic Keloid and the other a Lymphadenoma, which were undergoing successful treatment by the x rays.—Dr. T. J. T. McHattie showed a specimen of a Complete Gestation Sac delivered at the twenty-eighth week, in which the placenta from its wide extent had become prævia.—Dr. Shaw showed microscopical slides of the Meningococcus and the Influenza Bacillus, and also Two Brains from cases of Meningitis.

NOTTINGHAM MEDICO-CHIRURGICAL SOCIETY.—A meeting of this society was held on Nov. 11th.—Dr. P. Boobbyer, the President, gave his introductory address on the Birth- and Death-rates of Nottingham during the Past 25 Years as compared with Other Towns. Taking the birth-rate first this showed a fall of 30 per cent. in the last 25 years; indeed, a decrease of some sort was to be found in almost all the civilised cities of the world with certain exceptions, such as those of Ireland, Spain, and parts of Austria and Russia. The probable explanation of the exception in these cases was the local maintenance of the old-fashioned religious beliefs regarding the subject of marriage and its objects. Writers were not wanting to point to the probable outcome of this tendency which was in the direction of the extinction of the families of the ruling and professional classes in favour of a reckless and thriftless proletariat. Turning to death-rates, in the matter of both the general death-rate from all causes and that from the principal epidemic diseases, Nottingham showed a pretty steady improvement like most other large towns, but after making due allowance for exceptional epidemics of measles, whooping-cough, and diarrhœa it seemed clear that progress in the right direction had latterly not been quite so rapid here as in the case of some other similar towns. This was especially true of the death-rate from enteric fever, in which other towns by radical reforms in the matter of scavenging or refuse and sewage disposal had out-distanced Nottingham. During the year 1907, as the result of severe epidemics of measles, whooping-cough, and autumnal diarrhœa all occurring in the same year, the infant mortality for Nottingham had headed that of all other big towns. Pointing out that the local death-rate from pulmonary tuberculosis was actually less than that for London, the speaker, as the result of 24 years of public health work in the county and city of Nottingham, drew the moral that further defects of sanitation would have to be faced and made good, instancing more particularly the demolition or improvement of slum areas, as well as the substitution of a water-carriage system for the present system of dry pail-closets.

LIVERPOOL MEDICAL INSTITUTION.—A pathological meeting of this society was held on Nov. 12th, Mr. T. H. Bickerton, the President, being in the chair.—Dr. W. B. Warrington showed a series of specimens illustrating the relation of different clinical signs, especially ascites, to various lesions of the liver.—Mr. Murray exhibited Typhoid Organisms recently isolated from the medulla of the femur of a patient who had suffered from trouble in this bone since an attack of typhoid fever 29½ years ago.—Mr. W. Thelwall Thomas

[1] THE LANCET, Oct. 24th, 1908, p. 1255.

and Dr. J. Murray Bligh showed: 1. Carcinoma of the Ovary removed from a girl, aged 14 years. There was a history of wasting. The tumour occupied the greater part of the abdominal cavity and weighed 6 pounds. 2. Adenoma of the Tongue from a woman, aged 39 years. It was a sessile tumour situated at the base of the tongue. Large veins coursed over its surface and these had been responsible for severe hæmorrhage. 3. Naso-pharyngeal Fibroma removed from a youth, aged 19 years. It occupied the whole of the naso-pharynx and right nasal cavity. Breathing and swallowing were seriously obstructed and severe hæmorrhage had occurred. The growth was fibromatous, containing large blood-vessels.—Mr. D. Douglas-Crawford and Dr. H. Leith Murray showed: 1. Adenoma of the Tongue removed from a baby three days old. The tumour grew from the base of the tongue, was pedunculated, and gave rise to serious attacks of spasmodic dyspnœa. The tumour very closely resembled the gland tissue of the breast. 2. Adenoma of the Wall of the Maxillary Antrum removed from a woman 18 months ago. She then had a history of trouble for five years. The tumour had recently recurred; there was now proptosis but no invasion of the cheek or glands. The tumour showed apparently a simple cubical-celled adenoma.—Professor B. Moore gave a demonstration of Oxydases in Relation to Scorbutic and Antiscorbutic Foods. He showed by tests that these bodies were absent in foods showing scorbutic tendencies, were present in unboiled milk, while absent in boiled milk. Fresh vegetable juices contained them, but boiling or drying destroyed them. Prolonged boiling was necessary in the case of the potato. He showed a colloidal suspension containing oxydases obtained from the potato by precipitation with 20 per cent. alcohol.—Dr. T. R. Bradshaw did not consider that it was proved that scurvy was due to the absence of the antiscorbutic properties from the food. He considered it would be unwise to discourage the boiling of milk.

HUNTERIAN SOCIETY.—A meeting was held on Nov. 11th, Dr. A. T. Davies, the President, being in the chair.—Dr. Purves Stewart showed a large Tumour of the Pituitary Body, which had caused bilateral temporal hemiopia, drowsiness, and voracious appetite, a group of symptoms which he regarded as typical of tumours in this position.—Mr. H. M. Rigby showed a Hair Ball which he had removed from the stomach; it formed a complete cast of the viscus.—Dr. Russell Andrews showed a Large Fibroid Tumour which he had removed from the uterus during pregnancy without producing abortion; also some specimens illustrating Wertheim's method of performing hysterectomy for malignant disease of the cervix of the uterus.—Dr. W. Langdon Brown showed a Series of Intracranial Vascular Lesions, including two ruptured aneurysms of the anterior communicating artery, red softening following cerebral embolism in mitral stenosis, syphilitic thrombosis of the vertebral artery, and a lenticulo-striate hæmorrhage in a patient with infective endocarditis, presenting unusual symptoms. He spoke of the assistance that observation of the blood pressure had been in the diagnosis of some of these cases.—Dr. O. K. Williamson showed a Hypertrophied Heart from a case in which the blood pressure had been persistently high; the splanchnic vessels were more diseased than the thoracic aorta.

EDINBURGH OBSTETRICAL SOCIETY.—A meeting of this society was held on Nov. 11th, Professor William Stephenson, the President, being in the chair.—The following office-bearers were elected for the ensuing session:—President: Professor Stephenson. Vice-Presidents: (senior) Dr. F. W. N. Haultain, and (junior) Dr. A. H. Freeland Barbour. Treasurer: Dr. W. Craig. Secretaries: Dr. G. F. Barbour Simpson and Dr. Angus Macdonald. Librarian: Dr. Haultain. Editor of Transactions: Dr. W. Macrae Taylor. Members of Council: Dr. J. Lamond Lackie, Dr. D. J. Graham, Dr. A. T. Sloan, Dr. R. P. Ranken Lyle, Dr. J. W. Ballantyne, Dr. W. H. Miller, Dr. A. M. Easterbrook, and Dr. W. E. Frost.—Professor Stephenson gave his presidential address on a Historical Study of our Forefathers in Midwifery, discussing the views on various obstetric subjects held by William Smellie, William Hunter, Thomas Denman, Professor Hamilton (senior), Dr. John Binns of Glasgow, Dr. Ramsbotham (senior), and others.

Reviews and Notices of Books.

Lumley's Public Health Acts Annotated, with Appendices containing the Various Incorporated Statutes and Orders of the Local Government Board. Seventh edition, in two volumes. By ALEXANDER MACMORRAN, K.C., JOSHUA SCHOLEFIELD, and S. G. LUSHINGTON. London: Butterworth and Co. and Shaw and Sons. 1908. Vol. I., 1–1220 pp.; Vol. II., 1251–2444 pp. + Index 224 pp. Price £3 17*s.* 6*d.* for two volumes.

WHEN a standard work of this importance and magnitude reaches its seventh edition it has already established its claim as judged by the conditions of supply and demand to be regarded as practically without a rival, and whatever may have been the case formerly the amount of information which the two volumes here in question contain is greater than any other two volumes on the same subject with which we are acquainted. Clearly the next edition must run to three volumes if the work is to be handled easily.

Since the last edition of the work, some six years ago, Parliament has passed many public health statutes and the Local Government Board has issued many circulars on the subject, and all these are included, annotated and commented upon in the present issue. Moreover, the value of this edition is very materially enhanced by the inclusion of notes on the practice of the Local Government Board, as well as notes relating to the construction to be placed upon difficult provisions of the statutes. As the authors observe it is in many cases the "practice of the Board" which constitutes the law. The opinions of the Board are also of value in that they are the views of experts who have spent their life in this work, while in some instances such opinions are those of the law officers of the Crown. The work is admirably arranged with a capital table of contents at the beginning and a clear and helpful index at the end, considerations of no small importance in dealing with a treatise of this magnitude.

Vol. I. contains the Public Health Act, 1875, together with other measures more particularly associated with it, while Vol. II. contains in the first part (Appendix I.) numerous other Acts relative to municipal work and dating from the Knackers Act of 1786 to the Notification of Births Act and the Small Holdings and Allotments Act of 1907. The second part (Appendix II.) embodies circulars, forms, and regulations of the Local Government Board as well as certain orders of the Home Office and the Board of Agriculture. It is a little puzzling to find that Vol. I. ends at p. 1220 and that Vol. II. begins at p. 1251.

Although this work is intended primarily for, and is used mainly by, clerks to local authorities, barristers, and others of the legal profession, and a copy is probably to be found of one or another of the editions in practically every office of a local authority, there can be no doubt that its possession will prove a pillar of strength to all those medical officers of health who wish to understand without much effort the general provisions of any public health statute and to learn the decisions which have been given with regard to them.

The Natural History of Cancer, with Special Reference to its Causation and Prevention. By W. ROGER WILLIAMS, F.R.C.S. Eng. London: W. Heinemann. 1908. Pp. 519. Price 21*s.*

THERE has never been a time in the history of medicine when more books were published on cancer than the present, and it may also be truly said that nowadays the divergencies of opinion as to the cause of malignant disease are greater than ever. From the extent and duration of his researches into various phases and questions of cancer Mr. Williams ha

certainly earned the right to be heard, and his conclusions deserve the careful study of all who investigate this subject.

In the present work we find an immense amount of material which should prove of great value, and though we cannot endorse all the writer's conclusions we may at least express our appreciation of the manner in which he has carried out his task. In a chapter devoted to the geographical distribution of cancer a *résumé* is given of the frequency of malignant disease in different parts of the world, but it is certain that for many countries no real data are available. As to the increase of cancer the author considers that it is attributable to a general increase of material prosperity and urbanisation, or, as he says elsewhere, "out of these conditions, which comprise a more domesticated mode of life, want of proper exercise, and excess of food, I believe the present increased cancer mortality has sprung." Later we are told: "Probably no single factor is more potent in determining the outbreak of cancer in the predisposed than excessive feeding."

"Jensen's tumour" is not admitted to be cancerous by Mr. Williams but he does not appear to be aware that many other strains of inoculable tumours have been discovered and that these tumours are "cancerous" both histologically and clinically. In this connexion we might perhaps point out that in a subject so complex and uncertain as the etiology of cancer there is room for several opinions and that to dogmatise in the present state of our knowledge is hardly justifiable. The reader of Mr. Williams's work cannot fail to be struck by the very wide extent of his reading and no one will deny that he has accumulated an immense mass of facts, and inasmuch as references are given for nearly all the statements made the book will prove very useful to all workers on the subject of cancer.

A System of Medicine by Many Writers. Edited by Sir T. CLIFFORD ALLBUTT, K.C.B., M.A., M.D. Cantab., D.Sc., F.R.C.P. Lond., F.R.S., Regius Professor of Physic in the University of Cambridge; and HUMPHRY DAVY ROLLESTON, M.A., M.D. Cantab., F.R.C.P. Lond., Senior Physician, St. George's Hospital, Physician to the Victoria Hospital for Children. Vol. IV., Part I. London: Macmillan and Co., Limited. 1908. Pp. 764. Price 25*s.* net.

THE new edition of this "System of Medicine" will prove to be considerably larger than its predecessor; this is a matter of necessity, since much valuable work has been accomplished since the first edition was published. Any curtailment which would render necessary the omission of new knowledge, theoretical or practical, would naturally diminish its value and is therefore rightly to be deprecated. The editors have fully appreciated this principle and have acted accordingly. The fourth volume of the original System of Medicine has now been divided into two. The sections on Diseases of the Nose, Pharynx, and Larynx, which were originally condensed into 200 pages, have been removed and now, greatly expanded and accompanied by a section on Diseases of the Ear, will appear in a separate volume as Part II. of Vol. IV.

The present instalment, Part I. of Vol. IV., which contains the Diseases of the Liver, Pancreas, Ductless Glands, and Kidney, has undergone very considerable changes. Dr. A. Keith writes on the Anatomy of the Liver, and in a new article on Hepatoptosis supplements, so far as the liver is concerned, the more general article on Visceroptosis in Vol. III. He speaks favourably in regard to the operative treatment of hepatoptosis, quoting the 18 cases collected by Terrier, of which 15 were cured, one died, and in two the result was unknown.

Dr. William Hunter has supplied a new article on Delayed Chloroform Poisoning, and after a criticism of the views hitherto held on the subject arrives at the conclusion that the condition is essentially a toxæmia of hepatic origin due to the poisonous action of chloroform on the liver cell, already depressed in its functional activity by pre-existing causes involving deficiency of carbohydrate food material and by excessive tissue proteolysis. The fat changes which are found are at once the expression of this deficiency and the measure of the degree of strain placed upon the cell in maintaining its energy. The various diseases connected with the blood-vessels of the liver, including multiple abscesses and suppurative pylephlebitis, are described by Dr. W. P. Herringham.

The article on Cirrhosis of the Liver has been rewritten by Dr. H. P. Hawkins. His remarks on the etiology of the condition are worthy of note. He concludes that alcohol is the predominant cause of the disease, but he also states that it is open to question whether its action on the liver is direct and immediate or whether some other factor is intermediate or conjoint. The view is widely held that alcohol should be regarded not as the immediate cause but rather as predisposing to, or assisting the action of, some other poisonous agent which is not yet actually determined; this agent may possibly be of a bacterial nature. Dr. Hawkins further shows that it is beyond question that a non-alcoholic portal cirrhosis is occasionally met with in adults, more commonly so in children, and evidence is forthcoming to support the hypothesis that this form of cirrhosis may have a toxic origin. Dr. H. Morley Fletcher contributes a new article on Biliary Cirrhosis. He describes two recognised forms: (1) hypertrophic biliary cirrhosis (Hanot's disease), and (2) obstructive biliary cirrhosis. An article on Tuberculosis of the Liver has been written by Dr. W. Hale White, and one on Syphilis of the Liver by Dr. Hawkins.

In place of the valuable contribution to the first edition of Dr. Fitz of Boston, U.S.A., new articles on Disease of the Pancreas have been written by Dr. W. C. Bosanquet and Dr. G. Newton Pitt. In describing chronic pancreatitis Dr. Bosanquet mentions that among the toxic causes of this condition the most important is probably the abuse of alcohol; he also alludes to the fact that in the majority of cases of cirrhosis of the liver the pancreas is simultaneously affected. The vast majority of cases of fibrosis of the pancreas are only discovered on the post-mortem table, and it is clear, therefore, that mild degrees of the affection can run their course without giving rise to any characteristic symptoms. Dr. Newton Pitt gives a good account of tumours, cysts, and calculi of the pancreas. For purposes of convenience the descriptions of infantilism (Dr. John Thomson), obesity and adiposis dolorosa (Sir Dyce Duckworth), and œdema (Professor W. D. Halliburton) are appended to the section on Diseases of the Ductless Glands.

Professor G. R. Murray has written a new account of Myxœdema. In discussing the treatment of the disease by preparations of the thyroid gland, he expresses the opinion that the liquor thyroidei yields the best results. The liquid should be freshly prepared once a fortnight and be prescribed undiluted; the patient should be instructed to measure out the required dose in a minim glass and to add a dessertspoonful of water. The other articles on Diseases of the Thyroid Gland have been almost rewritten by Dr. Hector Mackenzie.

Acromegaly now finds a place in this volume instead of in Volume III., as in the previous edition, and is described by Professor E. F. Trevelyan. In stating the various therapeutic measures which have been tried in connexion with this disease he suggests that when headache is intractable trephining deserves a trial; the operation has already been proved to be of service in a few cases.

An important new article on Nephritis by Professor J. Rose Bradford takes the place of the article in the former edition on "Diseases of the Kidney Characterised by Albuminuria," by Dr. W. H. Dickinson. Professor Bradford discusses the condition known as "physiological albuminuria"—that is to say, in a "large but variable number of persons apparently healthy, the urine is found to contain protein matter in small quantities." This form of albuminuria has received considerable attention, and we agree with Professor Bradford when he says, "It is extremely doubtful, however, whether all such cases of albuminuria should be called 'physiological.'" It is quite possible that in some of the cases no serious kidney lesion is present, yet, on the other hand, such kidneys cannot with certainty be considered quite normal. The subject is of great importance in connexion with life assurance, and it is desirable that some statistics should be forthcoming as to the future history of those individuals who exhibit "physiological" albuminuria in young adult life. Other diseases of the kidney which are on the border-line between medicine and surgery are described by Mr. Henry Morris who has added a section on Malformations and Diseases of the Ureter. His remarks on renal calculus are particularly worthy of note.

We once more congratulate the editors on the success of their labours. The present volume is a valuable addition to the "System of Medicine." It contains much new matter and will serve as a most excellent work of reference.

A Text-book of the Principles of Animal Histology. By ULRIC DAHLGREN, M.S., of Princeton University; and WILLIAM A. KEPNER, A.B., of the University of Virginia. New York: The Macmillan Co. 1908. Pp. 515. Price 16*s.* net.

THIS work covers the general field of histology and is not restricted in the main to human and mammalian forms. It is intended to teach principles and deals with histology as a pure science. Here and there fundamental facts are illustrated by reference to the vegetable kingdom. Having regard to the fact that it deals with comparative histology it may be compared with Schneider's "Lerbuch der Vergleichenden Histologie der Thiere," although the arrangement is quite different in the well-known German work. The order of description follows a functional rather than a morphological sequence. After elementary chapters on protoplasm, the cell, and epithelium, we come to the supporting tissues, tissues of motion, electric tissues and those that produce light and heat, the circulatory tissues, and so on. There are a freshness and freedom of treatment of the subject which make the work peculiarly interesting to the reader who has a moderate knowledge of zoology, while the functional aspect of the tissues and organs described is prominently set forth. The amplification of body surface obtained by the corrugation, evagination, and invagination of surface is illustrated by excellent diagrams.

On p. 77 Cohnheim's fields are given as "Conheim's." The authors regard Engelmann's theory as so far the best theoretical explanation of the motion of the fibrillated muscle cell. The histogenesis of muscle is traced upwards in its evolution from the Medusa, and almost every group of animals is drawn upon to illustrate the structure and development of the motor tissues. The chapter on Tissues of Light-production is particularly interesting and includes a description of those all too little known mechanisms for the production and reflection of light in the cephalopods and the pholas. The importance of surface as a factor in the operations of the animal body is again insisted on and well illustrated in the chapter on circulation.

The chapter on the blood itself is short but suggestive. It does not give detailed descriptions of the leucocytes and their importance in health and disease. The authors speak of the nerve cells as organs of perception, conduction, and stimulation, the term "perception" being used in the sense of "perceiving or being stimulated by the outer conditions directly or indirectly through the stimulus of another nerve cell, cell product, or foreign substance." Bold, vigorous sketches are given of the varieties of nerve cells and also of the tissues associated with touch and equilibration. A good and readable account is presented of the eyes and other sense organs in invertebrates as well as vertebrates, which makes the chapter on the sense organs particularly interesting. Even the gas-secreting tissues are dealt with pretty fully, such as the float of Physalia, or Portuguese man-of-war, and the "gas secretion" of the teleost fishes. To each chapter some reference to the literature is added. The "technic," however, is given in "general outline."

We have said enough to show how interesting the whole work is in its all-round survey of animal histology in its wide sense. The work will prove eminently useful to the zoologist, but in it the physiologist and comparative anatomist will find much to excite thought, and any student who masters its contents will have laid a broad basis for future study of morphology, embryology, and the more strictly medical sciences. To this end the authors have chosen the functional rather than the embryological methods in developing their account of "Animal Histology." The illustrations—470 in all—are admirable, clear, bold, and effective. We have had much pleasure in perusing the book and cordially wish it the success which it deserves.

Clinical Bacteriology and Hæmatology for Practitioners. By W. D'ESTE EMERY, M.D., B.Sc. Lond., Clinical Pathologist to King's College Hospital and Pathologist to the Children's Hospital, Paddington Green, &c. Third edition. London: H. K. Lewis. 1908. Pp. 252. Price 7*s.* 6*d.* net.

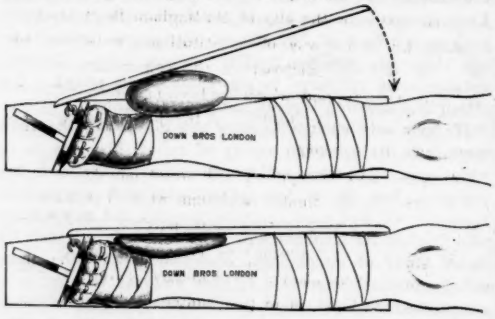
THE first and second editions of this book were reviewed by us at length and in terms of warm approval when they appeared, and we are glad to see that a third edition has been called for in so short a time. Since the book has been very slightly modified the present edition requires no detailed comment. The description of the methods used for the collection of blood for bacteriological examination is somewhat fuller and certain points of detail criticised adversely in the review of the second edition have been modified and improved. The method of lumbar puncture is also given with more detail and with additional illustrations. The author finds that the examination of the cerebro-spinal fluid is of considerable use in the diagnosis of uræmia. A description of the methods used for making bacterial vaccines forms one of the chief additions to the book. Amongst the various means employed for the diagnosis of enteric fever no mention is made of the isolation of the bacillus typhosus by culture, though this plan seems to be of increasing importance. The author still holds that the presence of Hofmann's bacillus in the throat justifies the diagnosis of diphtheria. A method for the examination of pleuritic and other exudations for the bacillus tuberculosis and Leishman's method for staining the spirochæta pallida have been added to the appendix.

The typography and paper of the book have not improved. This work gives a very concise and accurate account of the subjects of which it treats and cannot fail to be of value to any practitioner who desires to carry out such methods of investigation as are described. It further enables him to select the right materials for examination and to interpret intelligently the results which are obtained by himself or the reports which are furnished by those to whom he has submitted the materials for investigation.

New Inventions.

A NEW SPLINT FOR THE TREATMENT OF POTT'S FRACTURE.

I HAVE designed, and Messrs. Down Brothers have made, a new splint for the treatment of Pott's fracture. The apparatus consists of a short back splint with the foot-piece set at an angle to the back piece of about 30 degrees, so that the foot is brought into a position of inversion. There is also a single side splint of the same length as the back



splint. The side splint is provided with two rings at its lower end, which fasten on to two hooks below the foot-piece at its inner end. When the leg has been fixed on the back splint a large pad is applied to the inner side of the ankle. The side splint is then brought up to the back splint and fixed with a bandage carried round both back and side splints. The side splint thus acts as a lever of the second order, the fulcrum being the hinge which fastens it to the foot-piece of the back splint. The lever makes pressure through the pad on the inner side of the ankle, above the inner malleolus, and forces the leg outwards, thus reducing the outward displacement of the foot, and the broadening of the limb above the ankle-joint due to separation of the malleoli. The splints do not reach up the leg as far as the knee, so that the limb can be put up with the knee in the flexed position.

GEORGE WILKINSON, M.B., B.C. Cantab., F.R.C.S. Eng.,
Honorary Surgeon to the Sheffield Royal Hospital.

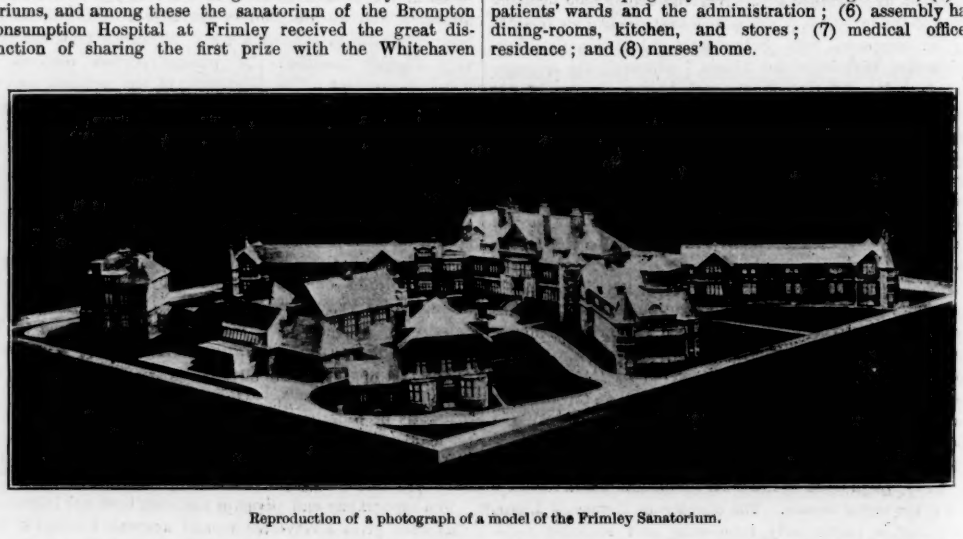
ELECTRIC ILLUMINATION FOR DIAGNOSIS.

Messrs. F. Davidson and Co. of 29, Great Portland-street, W., have shown us a very efficient and complete outfit for electric illumination of the eye, ear, nose, &c., and also for transillumination. The source of energy consists of what appears to be a very good form of dry cell. Two of these are fitted in each case but one is usually sufficient and the second, by a very simple device, can be thrown into circuit when the first shows signs of exhaustion. The small lamps give a very brilliant white light (but the intensity can be reduced if desired) which gives a very good transillumination of the antrum, &c. The set comprises the firm's new patent electric ophthalmoscope. There is also a full set of aural and nasal specula, a twin lamp for transillumination, and a cautery handle with some cautery burners, as well as extra lamps. If care be taken not to turn on the current longer than is actually required from 12 to 18 burnings can be done with the cautery before the cell is exhausted, and even after this the cell can be used for a considerable time for light. The cells cost 3*s.* each. The whole is contained in a very compact wooden case which is light and easily portable. It should prove of great use and convenience to specialists and others.

THE FRIMLEY SANATORIUM.

FROM all the civilised countries of the world there were sent to the International Congress on Tuberculosis at Washington exhibits in the form of drawings or models or both to show what was being done in the way of sanatoriums, and among these the sanatorium of the Brompton Consumption Hospital at Frimley received the great distinction of sharing the first prize with the Whitehaven Sanatorium, Pennsylvania. We may add that the Brompton Hospital received the first prize for institutions for the treatment of advanced cases.

We have already described this sanatorium at some length in THE LANCET,[1] giving also a ground plan and a picture of one elevation; we now show a reproduction of a photograph of the model which was exhibited. The model was made to a scale of eight feet to the inch, coloured after nature, with real gravel paths, the grass being of green cloth. Our readers can see well from the illustration the plan of the building. The eight groups of buildings consist of the following: (1) gate lodge; (2) laundry; (3) engine and boiler house, with engineer's residence; (4) pathological block with mortuary, all placed near the road for convenience of delivery of coal, &c., and for keeping any hearse out of the grounds; (5) the patients' wards and the administration; (6) assembly hall, dining-rooms, kitchen, and stores; (7) medical officers' residence; and (8) nurses' home.



Reproduction of a photograph of a model of the Frimley Sanatorium.

The problem which the architect, Mr. Edwin T. Hall, vice-president of the Royal Institute of British Architects, set himself to solve was to design the patients' building, so that there should be a minimum of distance from the administrative centre to the farthest ward; there should be only two storeys (ground and first floors) of wards and the building should be divisible into units to admit of elasticity of classification and segregation. This eventuated very well in the design adopted

[1] THE LANCET, August 5th, 1905, p. 398.

THE LANCET.

LONDON: SATURDAY, NOVEMBER 21, 1908.

The Appropriation of Sources of Water-Supply: a National Problem.

THE steady augmentation of our population and the growing desire for cleanliness, comfort, and even luxury are leading in every direction to an increasing demand for water not only for drinking purposes but also for baths and the cleansing of streets. The question, too, of street-watering is assuming vast proportions in consequence of the rural exodus and the growth of towns which results therefrom, while the substitution of the water-carriage system of excrement disposal for that of storage in privies, pans, and cesspools which still obtains so largely in our midland and northern towns is likely in the near future to make a very material addition to the drain upon our existing sources of water-supply. At the present time these demands are met in a somewhat haphazard fashion. Municipalities and water companies introduce Bills into Parliament which, sometimes after very scant consideration and by means of throwing a sop here and there to interested communities and persons, are allowed to reach the statute book, and the natural sources of one part of the country are freely tapped for the supply of towns far removed from such sources. Illustrations of what may be termed this predatory instinct are furnished by the cases of Birmingham and Liverpool as regards our Welsh sources of supply and by the case of Manchester as regards the English lakes. Gradually and almost unconsciously our upland water-supplies in the shape of natural or artificial lakes and the upper reaches of our rivers are being appropriated without any very clear idea as to the manner in which the demands of the future are to be met, and in the meantime numerous centres of population are left unsupplied and unconsidered. But this is only part of the story. Not only are our lake and river supplies being taken up, but also, and in a way more stealthily because less apparently, our underground water. Wells are sunk by public or private bodies which tap the underground reservoirs of supply without sufficient regard as to the manner in which the level, hardness, or salinity of the subterranean lake will be affected by the pumping operations. Numerous instances could be furnished of these conditions and of the manner in which some waters, such, for example, as those of the chalk in parts of Essex, have had their salinity increased as the water level descends.

A useful illustration of the difficulties referred to is furnished by the annual report of Dr. HENRY HANDFORD, the county medical officer of health of Nottinghamshire, which contains an account of the water-supplies of the county and of the manner in which the sources of such supplies may be encroached upon by authorities beyond the county limits. The account in question was, we imagine, prompted by the proposal of the corporation of Lincoln to take water from the north of Nottinghamshire for the supply of the city of Lincoln, where the well-known epidemic of enteric fever revealed the dangers of the existing river supply. Dr. HANDFORD, whose report is illustrated by a useful map, has for many years made a careful study of the water-supplies of the county, and he is satisfied that a shortage of water is certain to occur sooner or later. As is probably well known, the difficulty of obtaining an abundant supply for the city of Nottingham itself is one of the obstacles in the way of substituting a water carriage system of excrement disposal for the conservancy system which now prevails and which has been held responsible by the medical officer of health for the undue incidence of enteric fever in that city.

Nottinghamshire is supplied with water mainly from the pebble beds of the bunter sandstone which has a narrow outcrop along the west of the county north of Nottingham. To the east this bunter sandstone is overlaid by the keuper marl which in places attains a thickness of several hundred feet. Although there is in this bunter sandstone a large reservoir of underground water, it is only near the outcrop that it is palatable and has a moderate hardness. Where it has been over-pumped and the level lowered the hardness is enormously increased, and where the water is reached by piercing the keuper beds its character is altered and its hardness is so great that it is not useable—a fact which the city of Lincoln discovered to its cost after boring for 2200 feet; and this city has now obtained powers to sink a well in the bunter sandstone at Elkesley near the outcrop from which to take 3,000,000 gallons of water daily over the Lincolnshire border. The usual arrangements have been made by virtue of which the people of Nottinghamshire through whose districts the Lincoln mains run "get the first drink," but nevertheless Dr. HANDFORD thinks that conditions may subsequently arise by which, while the bunter sandstone may be supplying water to Nottinghamshire, Lincoln, and parts of Derbyshire, Nottinghamshire will be obliged to seek its future supplies from the Derwent and from the Lincolnshire limestones. He questions, indeed, whether the bunter sandstone of the county will suffice even until 1941 to supply the needs of the city and county of Nottingham as well as to supply Lincoln with 3,000,000 gallons daily. We shall not follow Dr. HANDFORD into his careful and detailed consideration of the subject, as our object here is national rather than local. We wish to emphasise the need for dealing with the problem of the water-supply as well as other matters obviously incidental to it in a scientific as well as comprehensive fashion by the formation of large local bodies having jurisdiction over groups of catchment areas and exercising control in all matters relating to water-supplies and sewage disposal as well as, in estuaries, over shell-fish intended for human consumption. It is clear that so long as a river is in the hands of the numerous local authorities along its banks no real progress will be made in the purification of its waters. B will not purify its sewage so long as A pollutes the river from above and C contaminates it below, and similarly A will not concern itself

with the future water-supply needs of B and C so long as it can procure for itself an adequate supply of pure water. We do not think that there is much difference of opinion amongst those who have studied the water problem as to the pressing necessity before the water-supplies of the country are all appropriated of acting upon the recommendation of the members of the Royal Commission on Sewage Disposal, who in their third report proposed the formation of rivers boards which should have control over all the matters referred to and whose work should be focussed in some central authority. It is doubtful whether a measure comprising these recommendations would have to be regarded as a contentious one and, this being so, it is not easy to understand why the recommendations of the Commission have not as yet been acted upon.

"The Human Woman."

THERE can hardly be two opinions as to the importance of the question which is so prominently before the public at the present day. The questions of the civic and political status of women cannot be shelved nor do really thoughtful people desire to shelve them, however much they may resent some of the methods which have been adopted by a certain section of women. There is at the present moment a solid body of responsible opinion desirous of attaining the ends advocated, though certainly retarded, by these women, and conscientious citizens cannot afford to ignore this fact. Times have changed. The wilderness in which such prophets as JOHN STUART MILL and JOHN STUART BLACKIE raised their voices in the last century has become peopled by an advancing army no longer to be brushed aside as a group of idealists or despised as a "shrieking sisterhood." With the views of philosophy, however, though they have undoubtedly become of late more favourable to women's claims, we are not here concerned; we are considering only the arguments put forward by an army of women who are prepared to make intellectual rather than physical assaults upon the doors of political institutes hitherto sacred to their husbands and brothers. A very spirited assault of the former order has been delivered by Lady GROVE[1] in a book which we are constrained to think will become a powerful weapon in the armoury of her cause. "The Human Woman" is a book which merits the careful consideration of her opponents, for if they can silence her arguments effectually they will strengthen in a material manner the case for restraining women from sharing equal political rights with men. The evidence, for instance, adduced from the State of Wyoming where women's suffrage has been in force for a quarter of a century deserves careful consideration, and Lady GROVE'S essay on "War and Woman's Suffrage" contains a shrewd refutation of the doctrine that only those who are prepared to defend the country with their bodies should have a voice in controlling its destinies. Indeed, the logical application of this doctrine would notably reduce the present suffrage. But although we are not concerned to discuss this question in its political bearings there are certain aspects of it which fall within the legitimate province of a medical journal and which are of vital moment to the topic.

We do not propose to deal directly with Lady GROVE'S principal theme, the case for women's suffrage, but with what appears to us the inevitable sequel to its attainment, the claim of women to enter Parliament, for they would hardly rest content to elect candidates not of their own choosing. To meet this problem she has written a chapter headed "Women in Assemblies," in which she seeks to show that the success of women on Local Government bodies justifies their promotion into Parliament itself should the country really desire it. Now here is the crux of the whole matter. In the first instance we may ask, "Do the women of the country really desire the suffrage, to say nothing of executive responsibility in Parliament?" a question of which Lady GROVE acknowledges the force; and secondly, are women as a whole as fitted mentally and physically for the business of legislation as are men? The question is so weighty that it must be decided upon general principles and not upon the performances of exceptional women. It is true that women have served, and are serving, with distinguished success on Local Government bodies, as many prominent men of affairs have testified in the book under discussion, but we submit that these are picked and pioneer women and hardly representative of the "average woman," and that they are, moreover, shining in a sphere where men have failed signally to realise their responsibilities. More honour to them, certainly, and more discredit to men grown careless, but nevertheless the case by no means necessarily applies in the affairs of Parliament to which its active members are accustomed to devote their talents strenuously and wholeheartedly. Are women fitted to supplement or to supplant men in the direct counsels of the nation, having regard to their mental equipment and physical disadvantages? We may say at once that we are convinced that a greater fundamental psychical sex difference exists between the average man and the average woman than Lady GROVE will admit, and we are further convinced that the preponderance of executive ability—the broad grasp of detail, the capacity of selecting the essential fact, and of seizing the decisive moment—resides in the masculine rather than the feminine mind. The talented author doubtless will disagree with us with vivacious eloquence and we have no other proof to support the faith that is in us than an appeal to experience, and we fear we shall hardly propitiate her or excuse our presumptuous attitude by confessing freely that the opposite sex possesses other and perhaps more glorious attributes of no less moment for the welfare of the race. We mean by experience rather a general experience of men and women than an examination of history; it would be hardly fair to point to the rarity of distinguished women, as compared to distinguished men, in every branch of human activity except those of the domestic life, in the past, for this may have been due to the handicap of their education—or lack of it—and of the convention of their upbringing. At the same time this has not prevented the sporadic appearance of genius amongst women—the recently deceased Dowager Empress of China affords a notable instance—but such genius has been infinitely

[1] The Human Woman. By Lady Grove. London: Smith, Elder, and Co. 1908.

rarer in its appearance than it has been amongst men, and we are entitled to consider that had it been present it would have come out as it has in many members of the male sex who have been severely handicapped by disadvantages of nurture and education. But certain women in former ages have enjoyed equal chances with men. An example comes readily to mind from the History of Medicine which tells of the mediæval lady graduates of the Salernitan school; but it is noteworthy that their successes did not make sufficient mark to enable women to retain the position won for them in medicine by TROTULA and her compeers. It may be conceded fairly that medical women of the present day are entering the lists on equal terms with medical men, at least as regards education; it will be interesting to see what proportion of medical women as compared to men 50 years hence have contributed unmistakeably to the advancement of their science. And whilst speaking on this subject we desire to enter a protest against the common remark that women's equality with man will give the final blow to the "spirit of chivalry." Surely it should foster a new chivalry, greater than the old, extended by men not to helpmeets and sympathisers but to competitors who will still be entitled to it because they are women. In the calling of medicine the conditions appear to us to be singularly favourable to the exhibition of so knightly a temper in the professional relations of medical men to medical women.

But the point which it concerns us more to examine is the physical disability of women for executive government, an objection to which a contemptuously curt dismissal is given in "The Human Woman," which considers under this head the question of maternity only. It takes no account of the fact that every normal woman during the most useful years of her life is subject to a recurrent physiological process which is always liable to become pathological. This being the case, it cannot be said that women enjoy equal health with men. The assertion that women in primitive races or in peasant classes do what we consider men's work is beside the mark, for we have to consider the normal health of women of the cultured classes of a civilised nation on whom, if on any, the responsibilities of government would naturally fall. We are repeatedly assured in "The Human Woman" that 82 per cent. of the women of this country earn their own living. We should be interested to know what percentage of women suffer periodically from a physical incapability which may be prostrating and is for a few days in every month so severe as to interfere seriously with the sufferer's power of attention to work. We do not deny that many women work and suffer, but we cannot agree that such martyrdom, heroic though it be, can ever be compatible with such efficiency as is essential to the supreme guidance of State affairs. This argument may appear to cast a shadow upon the medical skill of the day, but it must be remembered that no physician can shield his patients from the tax which their bodies pay upon their heritage of civilisation. And even though it were possible that a perfect preventive medicine should in the future relieve women of the diseases incidental to their sex, the supreme blessing of motherhood will never be withheld from them whilst the race endures. It may appear a *reductio ad absurdum* to suggest the situation of a Cabinet Minister obtaining leave of absence at the call of maternity, but such a possibility must be considered resolutely before women are allowed admittance to Parliament. Lady GROVE would minimise the inherent sex differences of human nature. Sex forms an infinitely wider psychical division in the human race than does any distinction of class when external things have been stripped away, and the reason is that the psychical kinship which binds together the members of each sex is the inevitable complement of their physical kinship. It follows that the antithesis of the two sexes must ever be the most ineradicable fact of human nature, though Lady GROVE seeks to controvert the fact. NIETZSCHE hardly overstated the case when he thundered forth, "It has not yet entered into the heart of man to conceive how foreign to each other are the nature of man and of woman." But there may be firm alliance between foreigners, and with certain of the motives at the root of the struggle for "women's emancipation" many men must be in agreement. The story is as old as the human race, for in the woman's present protest there rings the echo of an exceeding bitter cry from out the ages, the cry of a weaker sex in a tyrannous and degrading subjection to a stronger, and in so far as women's emancipation means the wiping out of the last traces of concubinage from the state of marriage we are in full sympathy with it; but may this not be accomplished by the home influence of enlightened womanhood acting through their menfolk? We have no space to discuss the evolution of the present relations of the sexes into the origins of which Lady GROVE enters in a boldly speculative manner, taking the view that the woman was in the beginning "the race" and man the mere fertiliser, but begging the question of how he came to be the "super-woman" in a piece of reasoning which we must qualify as superficial. It is something more than doubtful whether a substantial diminution of sexual self-consciousness will ever come about to lift the human race to the heights of which Lady GROVE dreams, for the desire of the woman will ever be to the man, and of the man to the woman. We will leave the case to our readers with a quotation from this clever book which we have read with more admiration than conviction. The passage refers to the physical strength of certain rare women, and a Hungarian lady is mentioned who served in the Revolutionary army of 1848 and who, "under the name of KARL, attained the rank of first lieutenant of Hussars. At this point, however, an artillery major stopped her military career by marrying her," which we make bold to consider is the very best thing that could have happened to her: she showed herself a "human woman." And that, as the lawyers say, is our case.

The Surgery of Spinal Caries.

THE presidential address delivered by Dr. T. S. KIRK at the Ulster Medical Society on Nov. 5th possessed much interest, for it dealt with the operative treatment of tuberculous caries of the spine, and it must be acknowledged that hitherto this morbid condition has not yielded much satisfaction to those surgeons who have ventured to

deal with it by operative procedures. The only operation which has been employed to any extent for spinal caries has been laminectomy and that has only been performed for consecutive paralysis, and there is no doubt that the general surgical opinion in this country is opposed to this operation for paraplegia following caries of the spine. The pressure on the spinal cord which leads to the paralysis, whether it acts directly or by the setting up of a transverse myelitis, is but little likely to be relieved by removing the laminæ of one or more vertebræ. The exudation mass giving rise to the pressure, for it must be very rare in spinal caries for the bone itself to exert any pressure on the cord, is situated at the anterior part of the spinal canal immediately behind the vertebral bodies and to a small extent on each side. It might therefore be reasonably expected that the mere removal of some laminæ would have no, or little, effect on the pressure exerted on the anterior aspect of the spinal cord. The results obtained by laminectomy support this theoretical conclusion. It is true that occasionally the paraplegia diminishes after the operation, but the proportion of cases in which this occurs is no greater than in those where the paraplegia is treated by prolonged rest in bed. It has therefore come to pass that most surgeons limit themselves to opening abscesses in cases of spinal caries but do not undertake any further operative procedures.

Dr. KIRK has confined the operations which he has performed to caries of the dorsal and lumbar regions, for in these the tuberculous disease is as a rule limited to the body of the vertebra, while in the cervical region it extends into the pedicles and the laminæ, and in the sacrum the whole bone is usually involved sooner or later. This limitation of the disease to the body in the dorsal and lumbar regions renders the lesion more amenable to treatment and more accessible to surgical interference. When a student and as a resident Dr. KIRK tells us that he saw several laminectomies done for paraplegia from caries and later he performed the operation once, but in all these cases the results were unsatisfactory. In 1896 he was asked to operate on a child who had suffered for long from complete paraplegia due to caries of the dorsal spine. He performed a costotransversectomy or MÉNARD'S operation with very good results. He was so satisfied with the effect of the operation in this case that he employed it in several other similar cases and in all the paraplegia disappeared. He was so much impressed by the success which he had attained that he employed MÉNARD'S operation in cases of spinal caries where no paraplegia was present but with palpable lumbar, iliac, or psoas abscesses; he evacuated the pus and removed the carious or necrotic bone. The results in these cases also were favourable. Dr. KIRK then determined to employ the same operation in early cases of spinal caries, for he was dissatisfied with the results of the usual treatment of such cases by prolonged rest in bed, fresh air, and good food, and the subsequent use of spinal supports. In early cases the disease is limited to the body of one vertebra, and if this vertebral body be removed the adjacent bodies fall together, and Dr. KIRK finds that the deformity which follows is very slight. The results of those early operations were very satisfactory and now Dr. KIRK considers that it is the best method of treatment of early caries of the spine in the dorsal and lumbar regions. The statistics which he gives are not complete, for he has been unable to trace many of the cases, but the results so far as known are as follows. In all he has operated on 61 cases of dorsal and lumbar spinal caries. There were five deaths immediately due to the operation. Three of these deaths occurred in adults who had suffered from the disease for many years. In one of these fatal cases in adults the operation was abandoned early as the anæsthetic was badly taken and the patient died a few hours later. In all the other fatal cases the patients had large abscesses. In all of the cases in which paraplegia was present the patient recovered from it after the operation. In ten cases with large abscesses the suppuration continued and eventually the patients died. The majority of the cases left the hospital in good general health, with sinuses discharging a small amount of pus, and in many of these when seen later the sinuses had healed. In 14 cases the wounds were completely healed before the patients left the hospital. The statistics, incomplete though they are, support, in Dr. KIRK'S opinion, his plea for early operation before any abscess has developed or pressure paraplegia has occurred. It is certainly worthy of note that not a single case died after the operation when performed at an early stage. The rate of mortality rises with the extent of the disease, the amount of abscess formation, and the presence of pressure effects on the cord.

The operation is as follows. A vertical incision is made immediately to the outer side of the tips of the transverse processes. If an abscess or a sinus or any indication of pressure on a nerve exists on one side the incision is made on that side, but if no indication exists the operation is performed on the right side. The centre of the incision should be opposite the vertebra affected, and it must be borne in mind that the most prominent spinous process belongs to the vertebra immediately above the carious body. The transverse processes of three vertebræ should be exposed, and in the dorsal region an inch of the ribs external to the tubercle should be cleared and the pleura should be carefully separated, for it is easily perforated. The ribs are then cut through with forceps and the transverse processes are also divided and these portions of bone are removed. The soft tissues are raised from the pedicles and sides of the bodies by a periosteal elevator and the carious bone is readily found. The hæmorrhage may be troublesome and this is best avoided by using the scalpel as little as possible. Three transverse processes require to be removed to give free access to the affected body. The carious bone is removed and then by means of a chisel or gouge the anterior and lateral walls of the cavity must be taken away so as to allow the level surfaces above and below to fall together and to obliterate it. The cavity is cleared out, dried, and packed with sterilised gauze soaked in a solution of picric acid. The superficial part of the wound may need to be reopened later. As soon as possible after the operation the patient is allowed to sit up, so as to bring together the bony surfaces; a spinal support is never employed. We have described the operation somewhat fully so as to enable surgeons to judge of the method employed. It is difficult without more ample statistics to form an exact opinion of the value of this method of treatment.

Most surgeons will not be in accord with Dr. KIRK as to the bad results of the ordinary methods of treatment in early cases; in fact, in the average early case of spinal caries immobilisation gives excellent results, bony union taking place without the formation of an abscess. It is very definitely an innovation to adopt operative procedures in early cases and we shall watch with interest the further development of the method.

Annotations.

"Ne quid nimis."

VEGETARIANISM AND PHYSIQUE.

PHYSIOLOGICAL considerations have long disposed of the view that a purely vegetarian diet ministers best to the needs of the human body, and although objection has been raised against physiological reasoning on the ground that it was largely theoretical a good deal of practical evidence has been forthcoming which has justified all speculation. It is well established, for example, that the individual who subsists upon an exclusively vegetable diet is far more susceptible to the attacks of disease than is the consumer of animal food. In short, the former's power of resistance to disease is decidedly weakened, for the reason that, after all, he is underfed, or in chemico-physiological terms, he fails to realise a sufficient intake of protein substance which makes for bodily energy, not to mention intellectual capacity. Every day as knowledge advances and powers to add to that knowledge are increased is the view strengthened that vegetarianism is a fallacy. The vegetarian school has pointed with triumph in its own mind to the oriental peoples as examples of physical strength and endurance supported alone by a vegetarian diet. These examples in the light of an exceedingly interesting practical inquiry on the subject can no longer serve the arguments of the vegetarian advocate. We refer to a study of the problems of nutrition connected particularly with the well-being and physique of the teeming natives of Bengal in relation to their diet which consists principally of rice. The investigation was undertaken by Captain D. McCAY, I.M.S., the professor of physiology at the Medical College, Calcutta, and it will be admitted, we think, that he has added a masterpiece of physiological inquiry to previous contributions. Theoretical considerations may be left out, although they are obviously of interest compared with the results of practical observations. Experimental details, also, though full of scientific interest, may be omitted, but it is enough to say that the results fully justify the conclusions arrived at. Anyone, we are told, who has seen the ordinary Bengali coolie at work will not require much statistical evidence to convince him of the marked superiority of the European; men have often to be employed in India for work that women will do in England. Again, from an insurance point of view the life of the Bengali is very inferior to that of the European. In spite of the fact that the Bengali exists on a protein metabolism very close in amount to that stated by Chittenden to be sufficient, his powers of resistance to disease are impoverished owing to an unreplenished condition of the blood accompanying a low protein intake. Nor is the function of the kidneys the better for a low protein intake, for kidney disease is more common among natives than among Europeans, whilst amongst the upper middle classes the extreme presence of glycosuria would prove conclusively "that the danger of an excess of carbohydrate intake is even a more real and present one than that of proteid excess." From this it would appear that the human machine in health is able to eliminate more completely the toxic products elaborated from a generous diet of protein than from a diet overstocked with carbohydrate. At all events, in the latter case the resisting power of the tissues to disease is decidedly lowered, so that diabetes, pneumonia, tuberculosis, spreading gangrene, and so forth are very prevalent amongst the Bengalis who subsist on a beggarly protein diet. It follows that vegetable food, unless consumed in large quantities, does not yield a sufficiency of protein, and therefore, in order to obtain this sufficiency, a quantity of carbohydrates has to be consumed simultaneously which places a strain upon the resources of the body ultimately leading to a reduced vitality which is favourable to microbial invasion and its results.

THE METROPOLITAN WATER-SUPPLY.

THE report of the Water Examiner on the condition of the metropolitan water-supply during the month of August has been issued and does not call for any exceptional comment. The condition of the London water during the month appears to have been as satisfactory as can be expected under existing conditions, thanks to the absence of floods on the Thames, although the mean rainfall for August was all but an inch above the mean average for that month. It is probable, however, that this increase of rainfall will be reflected in the bacteriological report for September. As it was, 13·6 per cent. of 100 cubic centimetre samples of filtered Thames water contained bacillus coli in August. This report also contains tables giving a summary of the state of the various water-supplies during the three summer months—June, July, and August. Comparing this quarter with the same months of 1907 it is found that during this year the raw waters contained the more bacteria, and in the case of raw Thames and Lea waters a larger proportion of samples contained typical bacillus coli in one cubic centimetre of water. There were, however, slightly fewer microbes of intestinal origin in the filtered water, which is perhaps to be accounted for by additional storage before use. The report further states that "chemically, the *raw* Thames water was less turbid and discoloured, and also contained less albuminoid nitrogen and absorbed less oxygen from permanganate in the 1908 summer quarter than in the 1907 quarter. The *raw* Lea and New River waters were slightly worse in 1908, as judged by the foregoing tests, except as regards albuminoid nitrogen in the case of the Lea. As regards the *filtered* waters the 1908 results compare favourably with the corresponding 1907 results with the exception of the New River and East London (Lea) districts." The further improvement of the London water-supply depends now upon increased storage accommodation, and it will be within our readers' knowledge that extensive works are at present being undertaken by the Metropolitan Water Board to construct a new pumping-station and reservoir at Island Barn, West Molesey. It was high time that the Board took advantage of the powers which were obtained by the Lambeth Waterworks Company in 1900 but which hitherto have been resolutely opposed by the local authorities on financial grounds, and this in spite of the fact that the Lambeth water has often been notably unsatisfactory. The water is to be taken from the Thames through an open conduit taking eight feet of water when the river is at normal level. The pumping engines will be able to raise 25,000,000 gallons daily. Mr. C. E. Hearson, chairman of the works and stores committee of the Board, in an address which he delivered recently when Mr. John Burns "turned the first sod," said that the occasion marked the commencement of a series of reservoirs which would add a storage capacity of 4700 million gallons to the

accommodation for 4530 million gallons which had been provided since the Board came into existence. That the £250,000 which this undertaking is to cost will be thoroughly well spent is certain, and this is made more certain by Dr. A. C. Houston's striking experiments upon the effect of storage of water upon typhoid bacilli, which we have reported in a previous article.[1] Where the money is to come from is another matter. The financial state of affairs disclosed at the meeting of the Board on July 17th last was eminently unsatisfactory, and still more unsatisfactory is the feeling which has been raised in the City by the new water assessment on the rateable value of business premises introduced by the Board. The late Lord Mayor, before retiring from office, presided at a meeting of protest against these charges which was held at the Mansion House, and we understand that in certain cases indignation has passed beyond the adoption of resolutions to the sinking of private wells, though this would not seem to be a means of escaping the rate. A body which exists for the public service is surely taking a wrong view of its functions when it adopts a policy which leads to this kind of retaliation.

THE CONTINENTAL HOTEL.

THE "hotel industry" has just had its International Congress in Rome, at which nearly every European country was represented. The motions submitted, discussed, and either carried or deferred to the Greek Kalends were numerous enough to convey an impression of the grave interests involved in the said "industry," but little was proposed, still less effected, in the way of innovation or reform so as to reassure the English-speaking contingent of the "great army of travel" that long-standing abuses would be done away with and long-desired conditions of health and comfort introduced in their stead. Much was said and something done as to the responsibilities of landlords in the matter of their clients' property when that has more or less mysteriously disappeared, if not left "in deposit" at the bureau; much debate, moreover, turned on the question of tips, *pourboires* or *mancie*—a question becoming yearly more clamant for solution; prominence was also given to the consideration of how to prevent the evils of competition, such as the spread of false news as to the health conditions of this or that rival resort, and kindred devices for detaining the client in one locality and preventing him from "patronising" another. These and questions of a kind more directly interesting to the landlord than to the public were duly formulated and considered; but nothing was said or even hinted at as to the essentials of sanitation in the hotel buildings themselves, as to the security of the *clientèle* in the matter of food and drink, as to the protection of the newly arrived guest from the "hotel rat," or *chevalier d'industrie*, so familiar to the travelling world on either Riviera. In fact, the "congressisti" in Rome committed the mistake that vitiates all the procedure of the cognate committee for "promoting the influx of foreigners into Italy," that of insisting on the secondary, and ignoring the primary, *momenta* in their brief. The committee referred to becomes eloquently expansive on the attractions, natural, historical, and artistic, of the Italian cities and the necessity of impressing these on an imperfectly appreciative world; but in ignorance of the fact that the said attractions are better understood and esteemed abroad than in Italy itself, it omits to satisfy the foreign guest (often an invalid) as to the health conditions of the locality which he affects as a place of sojourn, as to the quality of the food meted out to him, or the purity of the water-supply, or the genuineness of the wines offered for his consumption. Cases of poisoning from tinned meats or tinned fish have been frequent enough of late years to deter many an intending visitant from the scene of such a casualty; intestinal troubles of various kinds caused by adulterated wine or by "table-waters" that have long survived their *première jeunesse* have further reinforced the disposition to "fight shy" of the otherwise attractive suntrap impressed with such or similar associations. The landlord interest is so intimately dependent on the reputation as to hygiene and diet enjoyed by the hotel that the wonder is that in such congresses as that just held in Rome, or on committees like those for the attraction of the foreigner, the medical consultant it not invited to bear a part in their deliberations. The advances made in hotel enterprise and organisation, in hotel management and comfort, are doubtless conspicuous and praiseworthy. We have but to recall the description of the mediæval inn in the "Colloquia" of Erasmus, or, better still, in Scott's "Anne of Geierstein," to realise the interval that divides the hostel available for the post-Renaissance travellers with the hotel he may alight at in any provincial town on the continent. But the superiority of the latter is still far short of what it might be, and the ideal hotel will continue to be a desideratu until the first conditions of health and comfort are provided in the direction above indicated—in the essentials of sanitation, local and domestic; of pure air and pure water; of adequate ventilation and genial "exposure"; of sound food, animal and vegetable; and of a choice of beverages, stimulating or non-stimulating, with which the "analytical chemist" of Dickens has as little as possible to do.

[1] THE LANCET, July 25th, 1908, p. 255.

SUNLIGHT IN THE TREATMENT OF HIP DISEASE.

IN the *Canadian Journal of Medicine and Surgery* for November Dr. B. E. M'Kenzie has called attention to the value of sunlight in the treatment of hip disease. He began to treat cases of the disease in 1888 and in the first decade the mortality was about 10 per cent. In the next decade his results were much better. Careful scrutiny of the methods used showed that the improvement was chiefly due to the greater use of direct sunlight. The patient is kept upon a cot called a "Bradford frame." This consists of a rectangular frame about a foot longer than the patient and varying in width from 11 to 14 or 15 inches, according to the size of the patient, and covered with a sheet of canvas on which the patient lies. At each end is a bracket for attaching straps for extension and counter-extension. The patient is kept recumbent on this frame for months, not being allowed to rise even to the sitting posture. If much covering is necessary it may be wrapped around the patient and the frame and secured by safety-pins. A cage is thrown over the feet to prevent the bed clothing from resting upon them and producing a state of equinus or undue rotation of the limb and subsequent deformity. A pad is placed under the knee to maintain a few degrees of flexion. Extension is maintained by an anklet or gaiter with a buckle on each side from which a strap passes to the bracket at the lower end of the frame. Counter-extension is maintained by a pad in the perineum on the sound side round which passes a bandage to the bracket at the upper end of the frame. Dr. M'Kenzie finds this method of extension comfortable and more convenient than the use of a cord and weight. The cot can be carried from one place to another without disturbing the patient. Every day, whether in winter or summer, he is carried out of doors so as to be as fully exposed to the sun's rays as the grass. When the weather is suitable the affected part is exposed without any covering. This can be done during the greater part of the year without discomfort, and even in winter the patients are left out in the sunshine from morning till night on suitable days wrapped sufficiently

for protection. In summer there are few days when the temperature is so high as to be uncomfortable. The head and eyes are protected from the glare of the sun and from the great heat by keeping the head either in the shade of some building while the rest of the body is exposed or by the use of a sunshade. If at any time the high temperature causes discomfort the patient is carried into the shade. At the beginning of the treatment the time during which the patient is exposed is graduated so as to prevent undue sunburn. This may sometimes be avoided by keeping a sheet over the part. At times the patient should alternately lie upon his back and face so that all parts may be exposed to the sun. This treatment by recumbency and exposure to the sun is continued throughout the acute stage until there is evidence of complete cicatrisation. In nearly all cases this period amounts to several months and it may amount to years. When the patient is allowed to get up a brace is used which is both a crutch to carry the body's weight and an extending force to maintain traction upon the affected limb. This brace consists of a padded steel band which passes around the pelvis just above the great trochanter and a leg bar secured to this without a joint. This passes down the outer side of the leg to the sole of the foot and has a bolt which passes through a tube inserted in the heel of the boot. Two perineal straps are attached to the pelvic band. The perineal strap on the sound side is kept tighter than the other in order to afford counter-extension, while the bolt in the heel produces extension. Dr. M'Kenzie has treated 166 cases by this method with the following results. Eight patients died. Amputation was performed in two cases in which extensive suppuration had occurred. In 56 cases "first-class recovery" took place; a small proportion of the patients had good motion of the hip-joint and practically no shortening; others had ankylosis in good position. In only seven was there "poor recovery" (a femur moveable on the pelvis or long-discharging sinuses). The average time of confinement to the cot was six or seven months.

THE CHURCH AND SPIRITUAL HEALING.

BOTH on this and on the other side of the Atlantic there is a movement in the Church towards the consideration of matters connected with healing by other than physical means. On the other side of the Atlantic the Church has probably been led to initiate this movement on account of the extreme prevalence of the belief known as "Christian Science." In this country, however, a meeting which was held at Sion College on Nov. 16th owed its inception in main part to the discussion of the question at the recent Lambeth Conference. Various clergy and laymen attended the meeting, and it is stated that a motion was adopted to the following effect:—

That in the opinion of this Conference the time has come to form a Central Church Council in the Diocese of London for the consideration of questions connected with healing by spiritual means, and that the Bishop of London be respectfully asked to nominate the members of the council.

We are glad that the Church is taking up this question, for the amount of evil done by unlicensed and quack professors of "faith-healing" is incalculable. When the Church exhorted its sons in sickness to call for the duly ordained ministers of the Church it was never meant that material means should be ignored. The true meaning of the sacrament of unction has been gradually lost sight of until, in one branch of the Church, it has become, in popular belief at all events, a mere viaticum for the dying and in no way a means of restoration to health. On this point we may perhaps refer to the Order for the Visitation for the Sick as published in the first Prayer-Book of Edward VI. in which there was a form for anointing the sick person should he so desire it, and in which prayer was offered that God would vouchsafe to restore to the patient his bodily health and strength and to send him release of all his pains, troubles, and diseases both in body and mind. So long as the skill of the physician is not neglected there is no reason why the offices of the Church and their effect upon the mind of the patient who believes therein should not be used. Every medical man knows perfectly well that a patient who desires to, and believes that he will, get well is far more likely to recover than one who, owing to carelessness or despair, meets death half-way.

LADY (RUSSELL) REYNOLDS.

WE much regret to announce the death of Lady Reynolds which occurred at her house, 3, Spanish-place, Manchester-square, on Tuesday last, Nov. 17th, after about a fortnight's illness. Her life was so full and energetic that the announcement will come as a shock to her many friends. Lady Reynolds was the daughter of Mr. William Plunkett, a member of the Fingall family, and was first married to Mr. C. J. Champion-Crespigny, but in 1881, being then a widow, she became the wife of Sir John Russell Reynolds and from that time forward was well known to many members of the medical profession for her keen interest in medical work in all its phases. Rather late in life and when his health was not particularly good Sir Russell Reynolds became President of the Royal College of Physicians of London, and in 1895, two years later, President of the British Medical Association, holding for a time the two important offices concurrently. It was only Lady Reynolds's great energy, tact, and resolute determination to protect her husband as far as possible from unnecessary encroachment upon his time, that enabled Sir J. Russell Reynolds to discharge efficiently the duties of these posts. The experience which she then gained of medical politics and the large acquaintance which she formed in the medical world made her a real authority upon such matters. Sir J. Russell Reynolds died in 1896 and from that time forward Lady Reynolds's life was largely absorbed by her strenuous attempts to do work for the good of the medical profession and for the public benefit through that profession. She became an indefatigable worker upon the lay committees of hospitals, especially of those hospitals with which her distinguished husband was connected, and in all questions which arose, where her counsel was required, she gave it in an outspoken manner, with an absolute sense of justice and from the point of view of one who appreciated the aims and objects of the medical profession. She was by birth, training, and instinct a Tory, and was opposed to the movement which is designed to obtain larger political responsibilities for women, but every act of her public life showed that if those responsibilities had devolved upon her she would have known how to acquit herself manfully. As it was she was a living proof of the amount of influence for good which a thoroughly brave and capable woman may become.

MEDICAL REFERE S AND LIFE ASSURANCE.

AT the opening meeting of the Life Assurance Medical Officers' Association on Nov. 4th, Dr. T. Glover Lyon, the president, occupying the chair, Sir Thomas Oliver read a paper on "Some Medical and Insurance Problems arising out of Recent Industrial Legislation." He pointed out that while the Workmen's Compensation Acts of 1897 and 1906 had imposed a serious burden upon employers, the effect had been rendered comparatively light through distribution of the risk by insurance, while the beneficial effect of the compensation on injured workmen should undoubtedly promote social betterment. As regards Germany, however, where such insurance has now been compulsory for 25 years

it is asserted that thrift among the working classes of that country has not thereby been promoted. Under the original Act of 1897, unless incapacity arising from accident lasted for two weeks no compensation could be claimed, but under the Act of 1906 claim for compensation is created by a single week's incapacity for work, and incapacity lasting for a week entitles to compensation from the date of the accident. It is not surprising to hear that this change has led to an increase of notified accidents; and while the paper stated that malingering by injured workmen was undoubtedly one of the causes of this increase, it was mainly due to this change in the recent Act which tempted workmen to extend the period of incapacity into the second week, with a view to create a claim for compensation. It was at the same time suggested that the increase of accidents might be due to some extent to decreased care in the supervision of work and machinery by employers who are relieved of responsibility for accidents by insurance. The fact was also alluded to that workmen in receipt of compensation and also of sick allowance from friendly societies not infrequently drew allowances exceeding the amount of their wages when at work. It was, however, admitted that workmen are not exempt from the widespread effects of neurasthenia, tending to delay physical and mental recovery after accidental injury. In the discussion which followed the reading of the paper the interesting question was raised whether liability to accident increased with the age of the workman, on which point opinions were much divided. Sir John Brunner, referring to statistics on the subject recorded at the works of Brunner, Mond, and Co., stated that these statistics showed that the comparative liability to accident declined in constant relation to the increase of steadiness due to increased age of the workman. While it has been generally believed that the Workmen's Compensation Act would lead to increased litigation it is satisfactory to hear that the fear of this result has not been realised.

LIFTS AND HEALTH.

OWING to the increasing heights of new buildings the lift has become a necessity of modern life. The fatigue engendered by an ascent up the stairs to, say, the sixth floor of a hotel several times during the day would be intolerable, and without the lifts bedroom accommodation at such a level would appeal to nobody and would be so much space wasted. The same observations apply to offices in high buildings allocated to business purposes. The lift, in fact, was introduced to meet an enforced economy of space. Buildings could be pushed upwards but not outwards without encountering somebody else's property. Lifts, however, prove in the light of modern science to fulfil a much higher purpose than this. They bring within easy approach a healthier and purer environment. It is common knowledge that at the ordinary level of the highway we practically exist in a sediment of bacteria, amongst which pathogenic species may for certain be counted. Higher up bacteriological analysis gives a more satisfactory account. The refinements of bacteriology apart, chemistry also shows considerable impurities in the air at the ground level compared with the air, even at a small elevation, above. It follows that the air of buildings would be worst, both bacteriologically and chemically, on the ground floor, and then it would gradually show improvement as the floors above are reached until the cleanest air of all would be shown on the top floor. The lift may thus clearly take us out of the region of bacterial and other hurtful activities. Moreover, the health-giving properties of sunlight are more likely to be realised on the top floor than on any floor below. These facts render the policy of hotel-keepers and others perfectly illogical, which is that higher prices for rooms on the lower floors should be charged than for the rooms on the higher floors. It is, of course, in pure innocence that the hotel proprietor charges less for a healthier environment, and the visitor who has any regard for hygienic facts will not be slow to take advantage of this innocence. Doubtless there are those who reckon the ascending and descending of a building in a lift a source of inconvenience and delay or even of risk, but there are decided compensations, as modern science clearly teaches.

WATER ANALYSIS AND INSPECTION.

IN the *Queen's Medical Quarterly* Professor W. T. Connell of Queen's University, Kingston, Ontario, Canada, has called attention to a point insufficiently recognised by sanitary authorities, but often insisted upon in our columns, in the examination of water—the importance of inspecting the sources of supply. Samples of water are sent to a laboratory for analysis when inspection would at once reveal sources of contamination. Again, samples are sent to an analyst without sufficient data, such as situation of supply, proximity to sources of contamination, human or animal, and slope of the ground in the case of a well, to allow proper conclusions to be drawn. Inspection and analysis are complementary. Inspection reveals sources of contamination, while bacterial and chemical analysis reveals actual pollution, but in most cases cannot do more than suggest source of pollution. Professor Connell finds that too much dependence is often placed by local sanitary authorities on a few bacterial and chemical examinations. The sample passes a careful bacterial examination as it is of but small bulk and conditions of wind current and rainfall markedly affect its composition. An outbreak of disease afterwards occurs and sanitary inspection of the supply at once shows a patent source of pollution. Professor Connell does not desire to belittle analysis. Indeed, he looks upon it as the final court of appeal, but a sufficient number of tests must be made before a positive opinion can be given and inspection may make analysis unnecessary. On the other hand, a supply may pass inspection and be condemned by analysis, but further examination will then reveal the source of pollution. Sanitary water inspection is a matter for trained observers and such are not numerous in Canada. The need for them is shown by the prevalence of enteric fever in urban and rural communities throughout that country. Its development must cause increasing contamination of water-supplies unless steps are taken to prevent it. Professor Connell thinks that some such legislation as the Rivers Pollution Act of Great Britain will be necessary. In the absence of sewage treatment and purification he thinks that the filtration of water has become important. He has studied mechanical sand filtration for some years. The water is filtered through sand under pressure after addition of a measured quantity of alum (varying with the quality of the water) to precipitate the chalk. The precipitate forms a scum on the surface which acts as a nidus for the usual water bacteria and also acts as an efficient filter, partly mechanically and partly biologically. Professor Connell reports unfavourably on samples of water from wells: 58 out of 102 were infected with the colon bacillus. Professor Shutt of the Central Experimental Station, Ottawa, has said that "the majority of farm well waters submitted to me for analysis are little better than cesspools." In rural districts pollution of wells usually arises from animal sources, such as manure and other stable refuse, and then the danger of acquiring disease, apart from diarrhœal affections, is slight With pollution from human sources the danger is much greater. But it is not possible to distinguish colon bacilli of animal from those of human origin. Hence, again, the value

of inspection of the water-supply. In the State of Minnesota it is now the rule not to analyse samples of water forwarded to the laboratory but to send out inspectors who, after an accurate survey, may then proceed to make field "plates" from the water on the spot. These plates are sent to the laboratory for incubation and examination. Thus Minnesota places inspection first and, if necessary, then begins a bacteriological examination on the spot. The system may seem expensive but, as Professor Connell observes, one epidemic of enteric fever prevented would save the expense of many years.

THE LOCAL USE OF EPSOM SALTS IN THE PRIMARY DRESSING OF BURNS AND SCALDS.

IN the October number of the *International Journal of Surgery* is published a paper by Dr. M. N. Stowe of Jesup, Georgia, on the local use of magnesium sulphate as a first dressing for burns and scalds. The paper was read at the thirteenth annual meeting of the Association of Surgeons of the Southern Railway at Birmingham, Alabama. He recommends the employment of magnesium sulphate because it gives instant relief and the inflammatory reaction is much reduced, while there is no risk of poisonous effects from absorption. Epsom salts are nearly always available and the dressing is very inexpensive, and it is also easily removed. In many cases no further dressing is required, but even when it is thought desirable to employ any other form of dressing later the magnesium sulphate is valuable as a primary dressing. Dr. Stowe uses the salts as follows: Where the burnt part can be immersed a saturated solution of the salts should be used and the part should be kept in it until no pain is felt on withdrawal. We may mention that water at 62° F. dissolves more than its own weight of magnesium sulphate. If it is not convenient to use a solution, the dry salts may be applied and covered with a wet cloth; or a thick paste may be made and placed on the affected part, such as the eyes or nose. The method is simple and it appears to be worthy of trial.

THE POSSIBILITY OF INTRODUCING SECRECY IN THE CERTIFICATION AND REGISTRATION OF DEATHS.

Dr. E. M. Smith, medical officer of health of the city of York, read a paper at the recent Congress held by the Royal Sanitary Institute at Cardiff on the subject of death certification and registration. Among other matters discussed in connexion with this important subject prominence was given both in the paper and in the speeches which followed to the desirability of obtaining a fuller and more accurate statement of the cause of death than the medical attendant now gives in some cases and to the possible conditions which would conduce to this end. It is hardly to be denied that the cause of death under the existing law is at times disguised to some extent owing to a desire not to hurt the feelings of surviving relatives, or in order not to gratify their curiosity as to the private history of the deceased. Survivors may also sometimes desire reticence as to material matters in order not to afford evidence to insurance companies likely to be injurious to the estate of the deceased. Deaths due to alcoholism and to syphilis were given as instances of those not now accurately registered for reasons such as the e suggested, and the recommendations made in view of these circumstances were to the effect that medical practitioners should be paid by the State for death certification, that the certificates should be sent to registrars under cover, and that to relatives asking for copies of the certificate or to assurance companies a modified statement of the cause of death should be given and not a full copy. The question is one of public interest and is not easy of solution. It is of importance that the registration of deaths should provide absolutely trustworthy materials for the compilation of statistics and for the information of those concerned with the public health. There are, however, important uses for which the production of a full and accurate death certificate may be required, and if such a document facilitates the operations of life assurance companies it assists in a class of business of great public importance. The objects of such companies may be purely commercial so far as the relations of assurer and assured are concerned, but nevertheless the legislature would probably hesitate to enact anything which tended to hamper life assurance or to render it either more expensive or less secure. The medical man, from his point of view, rightly regards himself as the trustee of his patient's secret, although equally he appreciates the valueless nature of death statistics without accurate certification. The public, from their point of view, may also be justified in thinking that the dead are past being affected by the revelation of the cause of their decease, and that the interests of the living, on the whole, would be best served by a candid statement, open to inspection upon proof that such inspection would tend to further justice or to prevent injustice. The difficulty, no doubt, lies in the imposition of satisfactory conditions under which the full contents of the death certificate should be made known and in the fact that the candour of the medical man is likely to be proportionate in many cases to the stringency of those conditions. If, however, in certifying he earns a fee payable from the State he becomes even more conspicuously than now a State officer, bound as such to perform a public duty without fear or favour.

EXTRACTS OF MEAT AND SIMILAR PREPARATIONS.

A BULLETIN has just been issued[1] giving the results of a chemical study of various commercial products made from meat and of various adulterants of meat extracts. The investigation was initiated with a view of establishing standards for these preparations, many of which are widely advertised and highly recommended for invalids as concentrated nutritious foods. The brands examined included almost all the solid and fluid extracts of meat that are well known in the United Kingdom. It is interesting to note that American extracts of meat are now extensively prepared by the evaporation of the soup liquor obtained from meat which has been parboiled in the process of preparing canned meat. A first-grade extract of beef is prepared from beef alone, but inferior grades are obtained from the trimmings, including odds and ends of meat, muscle tissue and bone, or from the liquor in which corned beef has been cooked. In the latter case considerable quantities of nitrates and sodium chloride are present in the extract. The manufacturers claim that 100 pounds of soup liquor will yield one pound of meat extract. The products examined were divided into four classes—viz., solid and fluid extracts, meat juices, and miscellaneous preparations—and were judged by empirical standards. In the case of solid extracts the standard required not less than 75 per cent. of total solids, containing not more than 27 per cent. of ash, and not more than 12 per cent. of sodium chloride, or six-tenths per cent. of fat. It was also held that the nitrogenous compounds should contain not less than 40 per cent. of meat bases and not less than 10 per cent. of kreatin and kreatinin. Of the six solid extracts examined several fell below the definition in one or two points but they were satisfactory in most respects, the percentage of nitrogen

[1] Bulletin No. 114, Bureau of Chemistry, United States Department of Agriculture, by W. D. Bigelow and F. C. Cook, pp. 56 (1908).

being sufficiently high. In the case of the fluid extracts of meat, which should contain from 50 to 75 per cent. of solids, several fell below the minimum figure. Some of these products cost more than a solid extract of meat, although they contain much more water. None of the samples of meat juice examined contained any appreciable amount of coagulable protein which should be present to the extent of not less than 35 per cent. of the nitrogenous bodies. It is possible to prepare a fresh meat juice by heating the meat to a temperature not exceeding 60° C. and expressing the juice. Samples prepared in this way in the laboratory contained practically one-half the nitrogenous bodies in a coagulable form, and in several cases a considerably larger proportion of the nitrogenous bodies were coagulable. The report includes a valuable discussion of the methods of analysis of meat products and a *précis* of published work on the nutritive values of gelatin and meat extracts and juices.

INEBRIATES' HOMES.

OUR Manchester correspondent writes: "Much regret was felt by those interested in the reformation of drunkards by the disappointing and discouraging report recently issued by the committee of the Langho Inebriates' Home. There was a note, too, of hopelessness, as if all efforts were useless, in the discussion at the meeting by the justices and others. The cures are reported to be no more than 20 per cent. Several letters on the question have appeared in the local papers; one from the lady in charge of a private home in Manchester, who takes a more hopeful view, giving two 'out of many instances that could be cited' where women 'sodden with drink' have recovered their self-control. In one case the woman earned her own living for years, and in the other, after being in the home from January, 1897, to March, 1898, returned home and 'has since acted the part of a true mother to her children whom formerly she neglected entirely.' This woman had been a habitual drunkard, spending a large part of her time in public-houses. Perhaps there is too great a tendency to take for granted that if a woman once gives way to drink she cannot be reclaimed, and so far as her family or society is concerned, is irretrievably lost. The honorary secretary of the Women's Union, Church of England Temperance Society, on the part of her committee, regrets the statements as to the impossibility of the reform of women inebriates deduced from the experience of the Government inebriates' reformatory at Langho. Rescue and preventive work have been carried on in the Manchester diocese for seven years, and instances can be cited where women drunkards have given up drinking and stood firm for five or six years. She believes that one great cause of the failure of the Government homes in the work of reform is that the cases are taken there too late. 'Under the existing law nearly all the women have so irreparably injured their brains through long-continued drinking that only life detention can be of any use.' As long as this is the case early treatment cannot be adopted, and the course advocated by another writer cannot be carried out—viz., that 'the care of the person who has begun to give way to habits of intemperance should be firmly taken in hand at the outset.' Another difficulty is the want of supervision and sympathetic guidance when these poor feeble-willed people emerge from gaol or home. The force of habit, and perhaps the acute return of the craving for drink, may undo in a moment any good that detention has seemed to effect; for the poor victim of this besetment may turn into the public-house, and unless she is on the black list can be at once served with drink. A woman from Rochdale, it is stated, was recently committed at Bacup for a month. The chief constable said it was her 181st known conviction and she had probably been convicted at least 200 times. In such cases as these, permanent detention seems the best thing for the women themselves and their families. It would be useless to send these cases to Langho unless they could be kept there for the term of their natural lives. Only last week a man was sent to prison for four months with hard labour for persistent neglect of his seven children and, it may also be said, of his wife. The children were ill-fed, badly clothed, dirty, of course, and the rooms they lived in 'reeked with filth.' His wife was too ill to be removed, but the children were taken to the workhouse and put under medical treatment. Since Oct. 10th the family had had parish relief. Under these conditions it might have been thought that the opportunities for getting drunk would not be numerous, but on the 31st he contrived to get arrested for being drunk and fighting, and he was known to have been a drunkard for nine or ten years. Whether such a man is wilfully or involuntarily a drunkard he is a pest to society. What ought to be done with him? The injury he does to the State by being the father of—almost certainly—decadent children, injured still further by ill-treatment, ought to be prevented. But how? The solution that seems most promising to many is detention in a labour colony, where at least his keep ought to be earned, either permanently, or till there is good evidence of reformation."

THE POPE AS A "GOOD SAMARITAN."

THE "sacerdotal jubilee" of Pius X. has brought to the Vatican not only deputations and pilgrimages innumerable, charged with words of congratulation on the anniversary, but also messages, similarly inspired, by post and telegraph hardly less gratifying to the august Pontiff. Among these latter there is one which contains an incident thought worthy of a place in the "Vox Urbis," a monthly organ of the Vatican, written and published in the language of St. Augustine, or, the flow of its Latinity considered, of St. Jerome. The incident referred to must have relieved, in the Pope's mind, the monotony of the addresses and congratulatory letters, dealing as it does with the past, on which he has every right to dwell with satisfaction, and not on the present or the future, replete with the difficulties and dangers inseparable from "the head that wears a crown," still more from that which is pressed by a tiara. "Pius X. et Miles Austriacus," such is the title of the narrative to which the "Vox Urbis" draws the attention of its readers, and the tenor of which is as follows. In 1865, when the Venetian province was still a part of Austria, a soldier of the line, Johann Baier by name, during the autumn manœuvres, collapsed, footsore and weary, from his exertions, and was found lying in a ditch on the marching-route near the village of Tombolo. His condition was deplorable; heart failure seemed imminent, when there happened to pass by the priest of the parish, who gave him all the "first aid" that the "sagacité de cœur" could devise, refreshed him with food and drink and supplied him with the "sacro numismate," something more than the "twopence" (δύο δηνάρια) given by a similar benefactor on a similar occasion. That priest—a "Good Samaritan" for the nonce—was Giuseppe Sarto, now in the Chair of St. Peter. Next year the same soldier, serving in the Austrian lines on the fatal field of Sadowa, was severely wounded, and thereafter lived as a pensioner in his Silesian home, the village of Litschen, where he kept a tobacconist's shop. Forty years had elapsed when, reading a biographical sketch of Pius X., he thought that the Pontiff could be no other than the parish priest of Tombolo who had relieved him in his distress. Accordingly, he addressed the Holy Father in a modest letter, recalling the incident and asking if he were

right in his surmise. That letter, on its way from the Silesian village, somehow got "delayed in transmission," and it was not till the March of this year that it reached its destination. Submitted to the Pope by his private secretary, it received immediate and kindly acknowledgment, accompanied by the Apostolic benediction and a present of a still greater sum than the largess of 1865—"Missâ simul summâ libellarum bis centum" (according to the "Vox Urbis"), or 200 francs in Italian, that is £8 in English money.

HARVEY'S PADUAN DIPLOMA.

THE Royal College of Physicians of London has issued a facsimile of one of the most interesting documents in its library—namely, the Diploma of the Doctorate of William Harvey which he obtained from the University of Padua, granted in the name of Count Sigismund de Capitibus Listae. Dr. J. F. Payne, the learned Harveian librarian, has written some explanatory notes and has thoughtfully provided a translation for the benefit of those whose recollection of the elaborate "periods" of the Latin tongue has become somewhat faint. Harvey entered the University of Padua in 1598 and his diploma is dated 1602, "Indictione Quintadecima." These two last words require some explanation. The indiction was a cycle of 15 years, and to find the year of the indiction the number 3 is added to the date and the sum is divided by 15. The quotient gives the number of cycles and the remainder, if any, the year of the indiction. In the present case 1602 plus 3 makes 1605, which divides exactly by 15 into 107. As there is no remainder the year is the fifteenth year of the cycle. So "quintadecima indictione" means "in the last year of the cycle," and not, as would at first appear, "in the fifteenth cycle." To return to the diploma: it is beautifully written in Roman lettering with important capitals and sentences in gold. The first page is illuminated all over with a floral groundwork, three little miniatures of landscapes, and at the top the "stemma" of a *conciliarius* of the Natio Anglica. The illuminations, which are admirably reproduced, show a sad falling off from the beautiful work of the Middle Ages. In the text Harvey is held up to admiration in a most fulsome way, but this style, as Dr. Payne shows, was common to most documents of the kind. The Latin is no longer the rather free, easy-going Latin of the Middle Ages, but built up into "periods" of the most classical form. Take the following one as an example, which is even better than that which Professor Postgate in his "Sermo Latinus" evolved for the instruction of youth from the well remembered sentence "Balbus murum aedificavit." Here it is, and in its stately roll we seem to see the red gowns of the doctors, the swords, and the pompous manners of the seventeenth century:—

> Nos Sigismundus Comes praefatus Imperiali Authoritate Familiae Nostrae antiquitus gratiose concessa ab Invictissimo felicis recordationis Sigismundo olim Rom. Imperatore semper Augusto, ac Germaniae, Ungariae, etc. Rege, prout amplissimo patet Privilegio, Sigillo Imperiali munito, dato Basiliae Anno MCCCCXXXIIII die tertia Aprilis, Nobilem et Eruditissimum D. Guglielmum Harveum, Folkstoniensem Anglum Illustris D. Thomae filium, Inclytae Nationis Anglae Consiliarium, Themata in Artibus et Medicina proposita per Magistros Excellentissimos Artium et Medicinae Doctores Dominos Hieronymum Fabricium ab Aquapendente Anatomen et Chyrurgiam publice profitentem, Io: Thomam Minadoum Rhodiginum Practicam Extraordinariam Medicinae in primo loco legentem; Julium Casserium Placentinum Anatomen, Physicam et Chyrurgiam exercentem; Georgium Raguseum Venetum Physicam Ordinariam in secundo loco declarantem; docte, eloquenter, laudabiliter, et excellenter pertractantem, Argumentis, Dubiis, et Casibus sibi propositis exquisite respondentem, et clare solventem cum ingenti animi voluptate audivimus.

It will be seen that there are here 125 words between the principal subject and the verb. The Royal College of Physicians, Dr. Payne, and the printers responsible for the reproduction are alike to be congratulated. The reproduction is a limited issue for Fellows only, who can obtain a copy on application, and his Majesty the King has been graciously pleased to accept a copy thereof.

TACTICS AND THE HEALTH OF THE ARMY.

Two interesting and instructive articles which have appeared under the above heading in the last two numbers of the *Saturday Review*—viz., those for the 7th and 14th inst., by Field-Marshal Sir Evelyn Wood, V.C., are well worthy of the attention of our readers. The articles deal with events extending over a long period of time, from 1848 to 1908, and their value consists not only in the fact that they afford their author an opportunity of contrasting the earlier with the later period of our army history, but that they are also based upon the result of observations derived from a long personal experience of an exceptionally distinguished and varied nature. Like all stories worth the telling, the moral, if an old and oft-repeated one, lies on the surface. It shows how great have been the evil results of ignorance, prejudice, and a mistaken official parsimony in the past management of our wars, and it also shows how much has been already accomplished, and what is still to be hoped for and may potentially be achieved, by the application of sanitary science and preventive measures in war. The articles may be usefully read *in extenso* by medical officers and others interested in the subject, for they do not readily lend themselves to any brief summary. But, speaking generally, it may be said that the improvements that have taken place in the health of the army have for the time being followed upon, and been just in proportion to, the influence, independence, and efficiency of its medical service. Field-Marshal Sir Evelyn Wood in a concluding paragraph says:—

> I am convinced from my experience of 30 years as a general that the army doctors should be regarded not merely as healers of sick and wounded, but as trusted staff officers to advise their chiefs how to guard the troops against the originating and spreading of disease, and thus maintain the numbers of effectives in a campaign. This will result not only in the increasing of fire effect, but will raise immensely the fighting value of the troops and will incidentally enable us to reduce the costly and cumbersome hospital establishments and transport.

A PROCESS FOR THE PRESERVATION OF DEAD BODIES.

WE have recently had sundry documents submitted to us concerning a process whereby dead bodies can be preserved from decomposition for an indefinite time without the removal of any viscus and without any elaborate technique. The process was introduced by Cav. Chiarella and has the warm support of Professor Guido Baccelli and Dr. A. Severi, professor of forensic medicine in the University of Genoa. In March of this year Dr. Severi delivered a lecture on the process in the Anatomical Institute, Genoa, before the newly made graduates in medicine. Dr. Severi began by giving a short account of the processes involved in decomposition and of the various means by which this may be prevented. He gave a description of methods of embalming both ancient and modern, and then proceeded to describe that adopted by Chiarella. He employs lysoform, a combination of a potash soap with formaldehyde. The vessels are first washed out with the fluid and in some cases lysoform is injected into the abdominal cavity. Besides this Chiarella finds it of value to immerse the body in the lysoform for from 24 to 70 hours. Dr. Severi at his lecture demonstrated a body preserved by the Chiarella method in September, 1907. He pointed out that the skin was yellowish in colour and of a leathery consistency, but that the hair was normal and could not be easily pulled out. On the thoracic and abdominal cavities being opened there was no odour of putrefaction and the viscera were of normal colour and consistency. In

the right lung of the subject many tuberculous nodules could be recognised as well as a large cavity. In fact, according to Dr. Severi's account, the condition of the body was much the same as that of a body which we inspected in 1901[1] and which had been preserved by MM. de Rechter by means of formaldehyde vapour. So far as we can judge by the descriptions supplied to us Cav. Chiarella's method seems both simple and efficacious.

A TELEGRAM from the Acting Governor of the Mauritius, received at the Colonial Office on Nov. 13th, states that for the week ended Nov. 12th there were 18 cases of plague and 11 deaths from the disease.

ROYAL SOCIETY OF MEDICINE.

DEBATE ON HEREDITY, WITH SPECIAL REFERENCE TO CANCER, TUBERCULOSIS, AND DISEASE OF THE NERVOUS SYSTEM.—(*Continued from p. 1469.*)

Professor W. BATESON (Cambridge) said he supposed that the object of inviting him to address that gathering of medical men was to say something of the results which had been obtained in the study of heredity by the application of experimental methods to animals and plants. The work which had been done in the matter had been almost entirely by following up the hints obtained from the work of Mendel. He would have no difficulty in showing that the conclusions to which Mendel came were applicable with considerable precision to the descent of disease or congenital deformity in man. The first principle was shown by crossing tall with short plants. Biologists knew that a plant or animal in the ordinary way was a double structure, having received a series of elements from its father and a series of elements also from its mother. The confusion people used to get into when they tried to trace out rules of heredity in animals and plants was due largely to the fact that they did not realise sufficiently that a plant or animal was a double structure. As a matter of clinical experience it was not found that the union of tall with short produced plants of a height intermediate, but a certain number of plants as tall as one parent and a certain number as short as the other parent. Mendel made the discovery that in all cases to which his rule applied when dissimilarities met in one individual there was a separation between the two elements, which might be represented diagrammatically by lines representing respectively the male and female cells: that was the phenomenon of segregation. Biologists had been accustomed to talk of dominants and recessives. With regard to the inheritance of disease, the consequence of the recombinations of those cells produced by hybrids were obviously that in some cases there would be a meeting of long to long and short to short, and in other cases of long females with short males, or long males with short females. It was known by experiment that the short plants bred pure, just as if they had never had a cross at all. They bred pure because they had none of the quality of tallness in them. The interest in the theory lay in the fact that it enabled one to make analyses of the composition of the animal or plant so far as Mendelian principles could be traced. The plant could be analysed into its component units. The animal must be thought of as a great number of things: height, colour, and other characteristics were separately transmitted. Many attempts had been made to form pedigrees of the descent of eye colour. It was impossible to define the various colours of eyes by using words; but the difference between dark and light eyes consisted in the fact whether there was or was not pigment in front of the iris. In the ordinary blue eye there was no pigment in front of the iris. When the pigment was there it could be transmitted, but when there was none the children of such people had none of it. With regard to deformities and disease he showed photographs of a case of brachydactylia, in which the adults had only two phalanges in the fingers and toes. That condition behaved like the character of tallness in a plant and became a dominant. The individual might be pure to that condition, in which case all his children must have it, or he could be impure to it, like the plant in the case of tall and short. In all cases where disease existed it was the smaller number which dominated. That was the general rule. In the case of the fingers the reduction from three to two was dominant, and it was found also in the case of the Manx cat's tail in which the vertebræ were packed together in an irregular fashion instead of being divided out. The Manx cat was an imperfect dominant. He also showed a pedigree of cataract, the infantile form, in which the condition was seen at, or soon after, birth. The affected could pass it on and again it became dominant. Another slide showed the pedigree of a female with keratosis palmæ, in which condition the skin of the hands was abnormally thick. It behaved with one doubtful exception as a dominant and it was passed on through the affected. With regard to tuberculosis and cancer, biologists had no evidence which was direct, but a fact which had an indirect bearing of importance was that tuberculosis was an invasion by an infecting organism and it was not improbable that cancer might have a similar causation. Biologists could not trace on ordinary naturalist lines any ordinary heredity about those diseases. The case regarding nervous diseases was different. Another pedigree was from epidermolysis bullosa. There were exceptions in that but generally the persons who had the condition passed it on. A chart was also shown of retinitis pigmentosa in which the condition was passed on by those who had it. Dislocation of the lens, as worked out by Mr. A. Stanford Morton, was another condition which was transmitted. He also showed the largest pedigree of a human malformation or disease which had yet been worked out. It related to a condition known as night-blindness. It referred to a family which was investigated in the South of France in 1828. It was traced back to a person in the seventeenth century, who came into the south of France with the condition and all those who had it could be traced in a direct line. Human descent was most difficult to follow and anyone who had had experience of it could bear out what Sir William Gowers had said. There were departures from simple Mendelian rules which ought to be dealt with eventually. It could not be hoped that insanity would be regularly traced, chiefly because it depended in many instances on environmental influences and upon opportunity for development. The numbers arrived at in an investigation were 117 affected and 99 unaffected, which was as near equality as could be expected from the rough medical records available. With regard to recessives, that meant generations in which something was absent. The albino was a case in point: it lacked the normal amount of pigment. The rule for recessives was the reverse of that applying to dominants. With regard to the descent of sex-limited conditions, the best known of those were pseudo-hypertrophic muscular paralysis, hæmophilia, and colour-blindness. Pseudo-hypertrophic paralysis and hæmophilia were both so serious that it was impossible to hope to get pedigrees of the descendants of affected persons in sufficient quantity to enable an investigation to be made of them. But colour-blindness was not seriously damaging to the chances of life and therefore could be investigated. He thought they had been able to produce a scheme of descent which represented the facts so closely that there could be no reasonable doubt that it was very nearly the actual scheme. In the case of females the female would not be colour-blind unless she had two doses of colour-blindness; she must be pure in colour-blindness. But the male might show colour-blindness if he had only one dose of it. And that was represented in the scheme which he showed. When the female had only one dose she did not show it, although she might transmit it to her offspring. It meant that colour-blindness was dominant in males and recessive in females. Night-blindness might have been thought to be due to the absence of something in the body, but it was known that it was a condition due to the presence of something, possibly something the effect of which was comparable to nicotine poisoning. In some of the cases of disease many of the subjects had not lived long enough to show whether they could reproduce their species, and, if so, what the result would be.

Dr. G. H. SAVAGE said that his contribution to the debate would consist in bringing forward the impressions formed by a long clinical experience and he would do no more than

[1] THE LANCET, Nov. 9th, 1901, p. 1279.

express his opinions in general terms. There was a widely spread feeling that of all the neuroses insanity was the one most likely to reappear as the result of parental defect. He at once admitted that a very large amount of mental disorder was connected in one way or another with parental weakness, and therefore some things which were abnormal might appear in the offspring. He would propose to modify that somewhat later. The first difficulty lay with the general idea that all insanity was one—that, in fact, it was a disease. But, as was pointed out many years ago, insanity was not a disease, it was simply a negation. He believed strongly in the power of transmitting from parent to offspring tendencies to mental disorder. But the transmission was rarely what might be termed true—i.e., it was not common for the same form of mental disorder to appear in both parent and child. It was necessary to say that there were many branches to the neurotic tree and other conditions besides heredity were efficient causes in developing the form of disorder. The offspring of certain insane persons might develop epilepsy, megrim, and immoral or criminal tendencies, or be simply feeble-minded. Some forms of inherited mental weakness might be regarded rather as a reversion of type of mind. But they were very uncertain guides; the patients themselves were ignorant or unwilling witnesses, the friends were unwilling and certainly untrustworthy. Notwithstanding that he gave certain statistics which were more or less trustworthy; as trustworthy as any which could very well be obtained. From the last report of the Commissioners in Lunacy (1907), among the private patients under care, 19·6 per cent. of the men and 26·7 per cent. of the women were supposed to have hereditary neuroses. The numbers among the paupers were rather greater. Of the residents in Earlswood Asylum, 35·3 per cent. had a bad or nervous history. Among the children at the epileptic school colony at Lingfield the visiting physician gave 65 per cent., which he thought below the truth; but many of the children being foundlings no history had been obtainable. Dr. H. Ashby of Manchester found among the mentally defective that 75 per cent. had neurotic progenitors. He (Dr. Savage) believed that certain types of mental disorder owed more to hereditary disposition than to others. For general purposes he could divide the insanities which he was considering into those due to neuroses and those due to toxins. There were probably connecting links; the more excitable persons showed the disorder earliest. Rarely in his experience did anything like transmission of similar delusions occur. At the worst it was the few who showed insanity. Occasionally one met with a family of dumb mutes or idiots, the whole family being affected, and in such cases he had not been able to trace real insanity to the parents. The union of certain chemical bodies produced bodies totally different from the constituents of either, and so it seemed to be in the case of man and woman. The variations arose from types and conditions which at present were not understood. In the case of the insane or the highly neurotic there was such a thing as breeding-out. He had seen cases in which grave mental disorder in one generation had been represented in later generations by tricks of muscle or moral faults and in another generation by simple eccentricities or even brilliancy. The commission which recently reported on the condition of the feeble-minded devoted much time and attention to the question of hereditary predisposition. It concluded that feeble-minded parents might have both normal and feeble-minded children; that in many cases an originally feeble-minded person who perhaps started a line of feeble-minded descendants was not a descendant from a neurotic parent at all but was rather a reversion. His own view was that the mental disorder arising from toxins was not likely to be reproduced in the next generation, except under special conditions. For instance, a child who was begotten at the time the father had marked general paralysis of the insane was an idiot, whereas children born before the full development of the general paralysis in the father were healthy. An important thing to remember was the tendency of certain diseases to skip a generation. It was certainly met with in insanity. Yet skipping seemed to be comparatively rare. There were certain families in which there was most certainly power to transmit tendencies to insanity, and there seemed, as Sir William Gowers had pointed out, a transmission of bodily conditions such as arterial degeneration, which might be evidenced by apoplexy. There were many people who lived to a good age, but their death took place mentally first. He had known a woman coming from an insane stock who during 40 years in an asylum had more than a hundred attacks of acute mania, yet who in the interval was bright and showed no evidence of mental decay. It seemed that if a person was to become insane the chances of temporary recovery at all events seemed to depend to a great extent upon an inherited neurosis. He could not altogether pass over reference to what were called toxic insanities. It was possible that the neurotic were specially liable to exhibit nervous conditions under favouring circumstances. In a neurotic subject influenza certainly could precipitate an attack of insanity or emotional disturbance. The toxic disease which was of most interest was at present general paralysis of the insane and he felt considerable difficulty in that regard. The number of general paralytics with a neurotic inheritance was quite small, yet the returns from some observers had been very considerable. There were, as he had tried to point out, certainly links in the neurotic chain as seen in the offspring of the insane and of the highly neurotic, but he did not look upon inheritance as a tyrant with inflexible power which drove the offspring to destruction, and he did not think that because the fathers had eaten sour grapes therefore the children should necessarily have their teeth set on edge. There was, in his opinion, power to transmit acquired peculiarities, yet the tendency to transmit predisposition might be modified by surroundings.

Dr. F. W. MOTT said that he did not expect to be called upon yet to speak in the debate, and therefore he had no precise data to lay before the meeting. He had been engaged in an interesting research which had some peculiar bearing on the subject—namely, in order to see if the convolutional pattern showed a resemblance amongst relatives, such as their physiognomies so often do. The cases which were supplied to him from the London county asylums he had sent on to Mr. Schuster of Oxford, who was photographing and describing them. He sent papers to the different asylums, and the returns came back with comparatively few relatives. But he found that some of the relatives were at other asylums. As a matter of fact a big snowball had formed and it was getting bigger every day and one was now struck with the number of relatives in asylums. That was a fact of considerable importance because it was difficult to get hereditary histories from such people. He had obtained some very remarkable histories and some of them seemed to show what Professor Bateson had indicated, that it was almost impossible to trace insanity. He had instances of three and four generations of suicides with insanity in the family. Practically all the people in the family were insane. He had an instance of a whole family of insane men and women admitted into Colney Hatch Asylum of whom the father was a drunkard, and that had been copied into most of the temperance books notwithstanding that in the same passage he had given instances of people who were strict total abstainers, and yet all their three children suffered from adolescent insanity. On tracing them out there was found to be insanity in the collateral branches. Later he hoped to be able to present some interesting statistics concerning the relatives. There were some types of insanity which were especially prominent, such as dementia præcox. They were said to furnish a large number of cures, but they kept returning periodically. They were not anti-social, and therefore were considered to be cured. 80 per cent. of the cases of adolescent insanity could be shown to have an hereditary history. So far as he had gone, general paralysis was not common; he had found only a few cases in 100. When met with it usually had been general paralysis in the father and general paralysis in the daughter or the son, and in those children one generally found signs of hereditary syphilis. Therefore he looked upon general paralysis as essentially due to syphilis. That general paralytics showed so little signs on the body was one of great interest. When syphilis affected a whole race he thought there was a certain amount of immunity, but that was at the expense of throwing out antitoxins which were neutralised. And the recent researches which resulted in the finding of antibodies in the cerebro-spinal fluid in practically every case suggested that the nervous system wore itself out in throwing out those antibodies which would neutralise the effect of the conditions

produced by the virus of syphilis. Another subject on which he hoped later to give precise details was in regard to tuberculosis. He believed tuberculosis was not acquired in asylums. Patients in those institutions were of low vitality and they developed tuberculosis because of that. The disease got rid of many of the unfit, especially amongst cases of insanity. For the first three or four decades there were records of more than 2000 necropsies and there were certain types of insanity the subjects of which were especially liable to tuberculosis: especially adolescent insanity, melancholia, and the hereditary forms of mental disturbance. He believed that in those people there was a favourable soil which led to the easy development of the tuberculous organism. The incidence of tubercle at the same age inside asylums was from 15 to 20 times as great as outside asylums. Investigations on the air-shafts, &c., in asylums showed that the air was not impure there, and the nurses and attendants who were always in the asylums did not develop the disease except with distinct rarity. A very interesting point was that he had never found a case of tuberculous meningitis among the enormous number of cases he had seen. With regard to alcohol, he agreed it was a most important exciting cause of insanity, but among 2000 necropsies which he had made at Claybury he had only found cirrhosis of the liver with ascites in one, and that was Jane Cakebread, who was convicted 400 times before it was found she was incapable of taking care of herself. If it was such an important cause it did not show itself in any very marked degree in the organs. But the potential lunatic was readily acted upon by alcohol, and the subject of it was brought to the asylum earlier than he otherwise would have been.

The discussion was then adjourned.

At the adjourned meeting on Nov. 18th

Dr. CHARLES A. MERCIER said that he proposed to point out some of the fallacies with which the subject was beset and to indicate some of the precautions that might be taken to avoid them. The usual mode of determining the existence of a hereditary propensity to a disease was to ascertain whether there were in the parentage or ancestry or among the near relatives of the deceased person instances of the same disease; if such instances were found it was concluded that the disease was derived by inheritance. The most obvious trap was in the application of the method to diseases of frequent occurrence. Supposing a disease so common that it affected 19-20ths of the population, then nine out of every ten persons would have both parents affected by it and only one person in 360 would have both parents free from the disease. Such a large percentage of apparently diseased persons would justify, according to the method in use, the conclusion that the disease was certainly hereditary, and thus they would arrive at the conclusion that a common cold was a hereditary disease. It was argued that insanity was a hereditary disease because persons who were insane were frequent in the families of the insane, but until very recently no attempt had been made to ascertain whether such persons were not as frequent in the families of the sane. The various manifestations of nervous instability were so common that it was unjustifiable to draw from their frequency in the families of the sane any inference as to the heritability of insanity. He (Dr. Mercier) was impressed with the number of insane persons (not including general paralytics) in whose families exhaustive search failed to discover any insane relative within a reasonable degree of consanguinity; he was more impressed by the number of sane and normal persons who possessed near relatives that were either insane or subject to allied nervous disorders. When a comparatively rare disease such as hæmophilia was found to exist in the parents or near relatives of the diseased person, such a distribution of the disease was usually regarded as conclusive proof that the disease was hereditary; that inference, however, was quite unwarrantable and was usually shown to be so when the cause of the disease was discovered. A disease might be limited to a certain family without heredity having anything to do with the limitation, it was not justifiable to conclude that it was heritable merely because it exhibited family limitations. If it was established beyond question that insanity fell with special virulence upon certain families and left unaffected other families whose circumstances were the same, and if it could be established that the members of the families so affected had certain stigmata, still it was not justifiable to draw any conclusive presumption that insanity was heritable; all that they were justified in concluding was that it was probable that inheritance played a part in its production; something contributory to the disease might be inherited in such cases, but it did not follow that what was inherited was the disease itself; it might be a special vulnerability of the tissues or a special quality of blood which rendered the person so inheriting unable to resist the attacks of the noxious agent which was the true cause of the disease. For these reasons he (Dr. Mercier) believed that they were too apt to talk a little over-glibly about the inheritance of diseases. Supposing, however, that they had guarded themselves against all sources of fallacy and were justified in concluding that a disease was indisputably inherited, then they had to estimate the significance of that conclusion, and the significance for the members of the family in which the disease occurred would differ according to whether the disease was merely a variation or whether it was a true mutation. If it was a mere variation—that is to say, a mere pronounced deficiency or excess of some quality which generally varied in quantity, then it had little significance as a racial peculiarity. Such variations had a strong tendency to return to the average. When, however, the quality was not a mere exaggeration of a frequent variation but a true mutation—that is to say, a quality appearing *de novo* in the race—then it would breed true. Whenever a disease was distributed in successive generations in accordance with Mendelian laws it could not be doubted that the disease was truly inherited; but they were not entitled to assume the converse and to limit the inheritance of disease to those instances in which the numerical proportions required by the laws of Mendel were strictly observed. It was probable that there were disturbing factors which interfered with strict numerical accuracy, and it was manifest that the number of offspring of any one pair of human beings was too small to allow the laws of Mendel to be asserted completely. The Mendelian laws were never strictly true except in the long run—that is to say, when applied to an infinite series—but the series never was infinite, the run was never long, and in the human race it was a very short run; therefore, the laws of Mendel never could be strictly true except by accident, though they always tended towards truth. In conclusion, Dr. Mercier said that there had been no attempt made to estimate the number of the sane members of any family and the insane members, so as to compare the sane and the insane numerically. The compilation of the statistics of inheritance which appeared in the reports of the Commissioners in Lunacy was a waste of time and labour. The statistics were of no value at all for any practical or scientific purpose. As far as his (Dr. Mercier's) own observations of the family history of the insane went, they seemed to show that in some families the insane members were distributed approximately in accordance with Mendelian laws and in some they were not; in some instances insanity seemed to appear *de novo* as a mutation, in others it was clearly a variation.

The discussion was continued by Professor KARL PEARSON.

Dr. ARTHUR LATHAM then opened the discussion on Heredity in Tuberculosis, which will be found at p. 1512 of this issue. This was discussed by Dr. J. E. SQUIRE, and a report of his speech and of Professor KARL PEARSON'S speech will be published in the next issue of THE LANCET.

Dr. E. F. BASHFORD opened the discussion on Heredity in Cancer, and his paper is printed at p. 1508 of this issue.

The debate was then adjourned.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

AN ordinary meeting of the Council was held on Nov. 12th, Mr. HENRY MORRIS, the President, being in the chair.

In accordance with the report of the Court of Examiners it was resolved to issue diplomas of Membership to 91 successful candidates.

A letter was read from Mr. G. H. Makins resigning his seat

on the Court of Examiners and the PRESIDENT stated that the vacancy thus occasioned would be filled up at the next ordinary meeting of the Council on Dec. 10th.

Mr. A. W. Mayo Robson was elected the representative of the College on the Court of Governors of the University of Sheffield.

The PRESIDENT reported that the Bradshaw lecture would be delivered by Sir W. Watson Cheyne, Bart., C.B., on Friday, Dec. 4th, at 5 P.M., and that the subject of the lecture would be the Treatment of Wounds.

MEDICAL MEN AND MUNICIPAL HONOURS.

THE following is a list of members of the medical profession who have been elected or re-elected to the mayoral chair, together with brief notes of their medical and municipal careers so far as we have been able to ascertain them.

Aldeburgh.—Mrs. Elizabeth Garrett Anderson, M.D. Paris, L.S.A., is the first lady mayor to be elected since the passing of the Act in 1907, which admitted women to town councils. She obtained the L.S.A. in 1865 and graduated in the University of Paris in 1870. In 1866 she became senior physician to the New Hospital for Women and subsequently consulting physician. She was also dean and lecturer on medicine at the London School of Medicine for Women and visiting physician to the East London Children's Hospital.

Brecon.—Mr. George Philip Francis, L.R.C.S. Edin., L.A.H. Dub., J.P., who has been re-elected the Mayor of Brecon, was born in 1855, being the only son of the late Mr. C. Francis, J.P., of Vennyfach, Brecon. He received his medical education at St. Thomas's Hospital, taking the qualifications of L.R.C.S. Edin. and L.A.H. Dub. in 1879. Mr. Francis commenced practice at Bourton, Dorset, and continued there until 1887 when he succeeded to the practice of Mr. Talfourd Jones at Brecon. Mr. Francis is surgeon to the Brecon Infirmary and medical officer of health of the Merthyr Cynog district of the Brecon rural district council; he is also medical officer to H.M. Prison and to the post office at Brecon. Mr. Francis was elected to the town council unopposed four years ago. He is a prominent Freemason, a keen sportman, and a successful breeder and judge of hackney horses.

Berwick-on-Tweed.—Mr. Charles G. Maclagan, M.B., C.M. Edin., the mayor of Berwick-on-Tweed, graduated in Edinburgh in 1883 and subsequently commenced practice at Berwick-on-Tweed. He is an Admiralty surgeon and agent, surgeon-lieutenant in 7th Battalion Northumberland Fusiliers, and surgeon-major in the Army Reserve. He is district medical officer for the town of Berwick, and medical officer of the union workhouse. He entered the town council in 1897 and was sheriff in 1903–04. He was chairman of the school board from its formation until its abolition by the late Education Act. He was also chairman of the education committee of the town council and of the public health committee.

Conway.—Mr. Morgan John Morgan, L.R.C.P. & S. Edin., the mayor of Conway, was born in Waenfawr, near Carnarvon, in the year 1864. After being educated at Clynnog and Aberystwyth and finishing his preliminary studies he commenced his medical curriculum at Edinburgh in the year 1882. His career as a student was marked with success and he qualified in 1886. After spending two years as assistant in the large quarry district of Blaenau Ffestiniog he commenced a practice in Conway in 1888. Soon after this date he was elected unopposed as member of the town council, being then only 24 years of age. During the 19 years that he has been a member of the council he has taken a prominent part in the public life of the town and county. He has rendered signal service to the ratepayers in advocating a pure water-supply for the town. He has twice occupied the mayoral chair—in the years 1898–99 and 1900. In the latter year he had the honour of entertaining the Prince and Princess of Wales, then Duke and Duchess of York. For some years Mr. Morgan has been the leader of the Liberal party in the town and is chairman of the Conway Liberal Club.

Eye.—Mr. Edgar George Barnes, M.D. Lond., M.R.C.S. Eng., L.S.A., the mayor of Eye, who was born in 1848, received his medical education at St. George's Hospital. In 1869 he qualified as a Licentiate of the Society of Apothecaries, and in 1870 became a member of the Royal College of Surgeons in England. In the same year he graduated M.B. at the University of London and took honours in obstetric medicine. In 1873 he took the M.D. degree of his University. Since 1869 he has been engaged in general practice in Eye. He has held the appointments of medical officer of health of the borough of Eye and of the Hartismere rural district council since the passing of the Public Health Act, 1872, by which these offices were first created. For many years he has been a justice of the peace for the borough of Eye and chairman of the governors of Eye Grammar School. In 1882–83 he was president of the Norwich Medico-Chirurgical Society and from 1889 to 1901 he was secretary of the East Anglian branch of the British Medical Association, having been president of the East Anglian Branch of the British Medical Association in 1888.

Finsbury.—Mr. William Alfred Dingle, M.D. St. And., L.R.C.P. Lond., M.R.C.S. Eng., L.S.A., has been a member of the borough council of Finsbury for the last three years and is medical officer to the Holborn board of guardians. He is surgeon to the Houseless Poor Asylum and Surgeon-Major East London Royal Engineers (Territorials) and Army Medical Reserve. He is surgeon to the St. Luke's parochial charities and medical officer to the Linen and Woollen Drapers' Institute; a Fellow and Vice-President of the Hunterian Society, and member of council of the Volunteer Medical Association. In 1878 he contributed to THE LANCET an article entitled "Nitrite of Amyl in Sea Sickness." He has travelled a great deal and his knowledge has proved of considerable use on the public health committee of which he has been a member since his election to the council. His choice for the mayoralty was a unanimous one.

Kingston-on-Thames.—Mr. William Evelyn St. Lawrence Finny, M.B., M.Ch. R.U.I., L.R.C.P. Edin., received his education at St. Columba's College and Trinity College, Dublin. He graduated at the Royal University as M.B. and M.Ch. in 1887 and as B.A.O. in 1891. In 1897 he became a Licentiate of the Royal College of Physicians of Edinburgh and also obtained the L.M. Rotunda, Dublin, with special certificate in gynæcology. In 1891 he took up general practice at Kingston Hill and seven years later was elected to the town council and was chosen as mayor. Dr. Finny, who is an archæologist, was fortunate in being mayor at the time when the 700th anniversary of the granting of the first charter to the borough by King John was celebrated, and he designed a stained-glass window for the town-hall as a memorial of that occasion. He was re-elected mayor for the Coronation Year, 1901–02, and as mayor was present in Westminster Abbey at the King's Coronation, and received King Edward VII.'s Coronation medal. He also took a leading part in the celebration of the 1000th anniversary of the coronation of Edward the Elder at Kingston in 1901 and designed another memorial window for the town-hall. He was re-elected mayor for the third time November, 1908–09. Since joining the town council he has served on the sanitary and other committees. He is a member of the council of the Surrey Archæological Society and a justice of the peace for his borough.

Leicester.—Mr. Charles Lakin, L.R.C.P. Edin., L.F.P.S. Glasg., the mayor of Leicester, is a native of Nottingham and went to Leicester 50 years ago and for many years has been a highly respected member of the medical profession in the town. He became a member of the Leicester town council 23 years ago, and 16 years since was elected an alderman. During the whole of his connexion with the council he has been a member of the sanitary committee, the asylum committee, the library committee, and the water committee. On the sanitary committee he has distinguished himself by devotion to duty and his experience and ability have made his services invaluable. Leicester's new mayor has the reputation of being a man of independent thought and action.

Montgomery.—Mr. Nicholas Watson Fairles-Humphreys, M.R.C.S. Eng., L.S.A., who has been re-elected Mayor of Montgomery, was born in 1837 and was educated at St. Bartholomew's Hospital. In 1885 he was elected alderman for the borough of Montgomery and has been seven times mayor of that borough. He is a justice of the peace for the county of Montgomeryshire, was high sheriff in 1882–83, and has been a county alderman since 1889. His grandfather, Nicholas Fairles, justice of the peace for

the county of Durham, was the originator of the lifeboat movement and chairman of the first committee.

Ruthin.—Mr. Thomas Owen Jones, L.R.C.P., L.R.C.S. Edin., L.F.P.S. Glasg., the mayor of Ruthin, received his medical education at Anderson's College, Glasgow, and qualified in 1894. He obtained the appointment of medical officer of health of the Ruthin rural district in 1898, when he went to reside in the district. He is a Fellow of the Royal Institute of Public Health, deputy medical officer to H.M. prison and to Ruthin Union, inspector of school children, and lecturer and examiner to St. John Ambulance Association. For six years he was a member of the Ruthin town council but retired from active work on the council about three years ago.

Welshpool.—Mr. Richard David Thomas, L.R.C.P., L.R.C.S. Edin., L.F.P.S. Glasg., who has been re-elected the mayor of Welshpool, is a native of Cemmes Bay, Anglesea, and has been resident in Welshpool for more than 18 years. He is a county district coroner, Poor-law medical officer and public vaccinator for Forden and Llanfyllin unions, medical officer of health of the Forden district, and medical inspector of school children. He first entered the town council in 1898 and has since been returned twice. In all that concerns the health of the borough he takes a most active interest.

NOTE.—By an error on the part of a correspondent we announced in our last issue that Dr. J. R. Hughes of Denbigh had been elected mayor of that borough.

MEDICINE AND THE LAW.

Prosecution for Practising under a False Description.

ON Nov. 5th before Sir Albert de Rutzen, at Bow-street police court, William Henry Tucker, *alias* John Dale Tucker, 58, was charged on a warrant with "falsely using the description of a Bachelor of Medicine and with acting as a doctor without being duly qualified." On Sept. 28th last the prisoner called upon Dr. J. Field Hall, managing director of Messrs. Field Hall, Limited, medical transfer agents, Strand, and stated that he was a medical practitioner and that he wished to dispose of his practice which he had been carrying on in Hackney. He was handed a printed form and this he returned duly filled up on the following day. His name then appeared as William Tucker, M.B. The premium which he asked for his practice was £160, which included the furniture. The reason which he gave for wishing to dispose of his practice was that he intended to go abroad. There were two William Tuckers on the Medical Register, but one was William Eldon Tucker and the other William Hancock Tucker. In 1906 the prisoner was convicted at Warwick Assizes of forging a death certificate in the name of William Eldon Tucker and sentenced to three years' penal servitude. At the trial he admitted that that was not his name. The magistrate said that he would not take the prisoner's conviction at Warwick Assizes into account. He imposed a penalty of £15 with £5 5*s.* costs. The practice of the healing art has long obtained legal sanction and recognition in this country. Practitioners were formerly divided into three main branches, known respectively as physicians, surgeons or barber chirurgeons, and apothecaries, whose functions and status were quite distinct, who were governed by different charters and statutes, and pursued their callings independently of, and sometimes in antagonism to, one another. Besides the above, there have always been, as there are still, persons who attended to human ailments without having any legally recognised qualification for doing so. The union of all qualified persons and their recognition as members of one profession are modern. By a statute passed in the year 1511 (3 Hen. 8, c. 11) no person was permitted to take upon him to exercise and occupy as a physician and surgeon until he had been examined and approved for that calling. The examination was in those days conducted under the sanction of, and the approval obtained from, the bishop of the diocese. Physicians obtained a charter of incorporation in the year 1518, and in 1522 their College got the right of examining and approving persons to practise physic concurrently with graduates of the Universities of Oxford and Cambridge. The bishop's licence was thus superseded (14 & 15 Hen. 8, c. 5). The College was also empowered to exercise control and supervision over all dealers in drugs. Surgery was originally practised by barbers. In the City of London the barbers obtained a charter of incorporation from Edward IV. in the year 1461. Many other skilled surgeons were, however, in practice, and in the year 1540 they and the barbers were incorporated and were given the exclusive right to practise surgery within the City of London and its suburbs (32 Hen. 8, c. 42). Under the title of "the mystery and commonalty of barbers and surgeons of London," the physicians and barber-surgeons seem to have attempted to monopolise all treatment of disease to their own profit, for in the year 1542 (34 & 35 Hen. 8, c. 9) an Act was passed declaring that it shall be lawful for any subject of the King "having knowledge and experience of the nature of herbs, roots, and waters, or the operation of the same, to practise, use, and minister in and to any *outward* disorder, any herbs, ointments, bettes, pultess, and corn-plaisters, according to their cunning, or drinks for the stone, strangury, or agues, without suit, vexation, trouble, penalty, or loss of their goods." The company obtained a further charter in the year 1629 (5 Car. 1), giving it the right to examine and approve all persons who wished to practise surgery in London and Westminster, and empowering persons so approved to practise anywhere in England. In the year 1745 by Statute 18 Geo. 2, c. 15, the barbers and surgeons were separated into two companies. All the above liberties and privileges were transferred to the new Company of the Art and Science of Surgeons of London, who were empowered to make by-laws, &c., for their own regulation, ordinance, and government, and to examine candidates and authorising those who passed successfully to practise the art and science of surgery throughout His Majesty's dominions. It has been suggested that the above Acts, or at any rate the older ones, are obsolete. The Court of Appeal, however, in 1885 did not adopt the suggestion, though it did not expressly overrule it (Davies *v.* Makuna, 29 Ch.D. 596). There have since that time been several general Statute Laws Revision Acts; but the above Acts, though amended in some minor points, remain on the list of statutes in force. In the year 1618 James I. granted a charter of incorporation to the apothecaries of London by virtue of which they practised their art and mysteries and enjoyed special rights and privileges for a period of two centuries. The charter was superseded in the year 1815 by the Apothecaries Act (55 Geo. 3, c. 194). By it the Master, Wardens, and Society of Apothecaries were empowered to regulate the conduct of members of their craft throughout England and Wales. Apothecaries are distinct from chemists in that they may administer medicines, while chemists may only prepare, dispense, and sell them. If a chemist prescribes medicine to his customers, as well as makes it up and sells it, he renders himself liable to a penalty (Apothecaries Co. *v.* Nottingham, 34 L.T. 76). The union of the different branches of the medical profession under one governing body was effected in the year 1858 by the Medical Act (21 & 22 Vict. c. 90). The original Act was amended in 1859 (22 Vict. c. 21), 1860 (23 & 24 Vict. c. 7), 1876 (39 & 40 Vict. c. 40 and c. 41), and in 1886 (49 & 50 Vict. c. 48). These Acts are to be read together and are known as the Medical Acts. The Privy Council has now a general power of supervision over the General Medical Council. If at any time it appears to the former that the General Medical Council has failed to exercise any power or to perform any duty vested in or imposed on it by the Acts, it may notify its opinion of the same, and if the General Medical Council fails to comply with any directions of the Privy Council relating to such notification the Privy Council may itself give effect to its directions (Act of 1886, s. 19). Prior to 1887 the various constituents of the General Medical Council each granted their own diplomas, entitling their holders to practise in some one or more departments of medicine—e.g., as apothecaries or surgeons. More than one diploma was requisite for a man who was desirous of practising generally. Since June, 1887, no person may be registered unless he has passed a qualifying examination sufficient to guarantee the possession of the knowledge and skill requisite for the efficient practice of medicine, surgery, and midwifery (Act of 1886, ss. 2 and 3). Any person wilfully and falsely pretending to be, or taking or using the names or titles of, a physician, doctor of medicine, licentiate in medicine and surgery, bachelor of medicine, surgeon, general practitioner, or apothecary, or any name, title, addition, or description implying that he is a

registered person, or that he is recognised by law as a physician, or surgeon, or licentiate in medicine and surgery, or an apothecary may, upon a summary conviction for any such offences, be fined a sum not exceeding £20 (Act of 1858, s. 40).

Demanding Money by Menaces from a Medical Practitioner.

At the recent sessions at the Old Bailey Mr. Justice Bigham passed a sentence of seven years' penal servitude upon a labourer, 29 years of age, giving the name of George Sims, and living at a Rowton House, who was indicted for demanding money with menaces from two different gentlemen. The first of these was a medical practitioner practising at Highgate; he was a stranger to the prisoner, and being threatened in a letter with exposure of some kind in the newspapers unless he sent the writer the sum of £500 he placed the matter in the hands of the police, who are to be congratulated on their success in bringing the offender without delay to justice. This was, no doubt, an attempt at extortion of so stupid and aimless a kind that no sensible man need have been seriously alarmed by it, but such an incident must always cause trouble and anxiety to some extent, and medical men should note the attack made on a brother practitioner on account of its very groundlessness and because they are peculiarly likely to be the target of the swindling mendicant, the blackmailer, or of anyone else to whom it is of importance to ascertain names, addresses, and all other details possible with regard to persons of respectable position likely to prove suitable victims. In this connexion we quote a statement made by the convict Sims after his arrest. He said to the police who had told him that his handwriting in the letters which he had written had been identified: "Its no use denying it. I did write them in the Free Library in the New Cut, Lambeth. I can't think what made me do it. I can't help it. I used that address as I thought it would be the best place for me to receive replies. I got the names and addresses from directories." Frequent mention has been made in THE LANCET of the danger arising from the unrestricted use of free libraries by all comers. Sims in the above statement said that he did not know what made him do it. It is quite obvious, however, that the newspapers, filled recently with accounts of a notorious trial, probably suggested or helped to inspire the crime, and that the books of reference which with the newspapers were placed at his disposal in the New Cut Free Library supplied the means of carrying it out. It is the begging letter writer, however, more frequently than the blackmailer who finds warmth, light, comfort, and all else that he wants to assist him free of charge at the free library.

Inaccurate Death Certification.

At a recent inquest upon the body of a newly born child at Fulham a serious error of judgment was shown to have been committed by Mr. H. A. Ehrlich, a medical practitioner who had been asked to give a certificate for burial. According to the explanation which he gave in the witness-box he at first certified the deceased child as stillborn in order to enable the parents to have the body buried as such. This, he admitted, was not correct, and afterwards, when the parents found that proof of the fact that the child had lived for three hours and then died would allow them to receive an allowance from a benefit club, the medical man gave a second certificate embodying the true facts. It is not surprising that in such circumstances an inquest followed and that the coroner admonished the medical man with regard to the unlawful and dangerous course which he had pursued. In order to conduce to accurate registration and to prevent possible concealment of crime, as well as for other reasons, the 18th section of the Act of 1874, which at present regulates the registration of births and deaths, orders that "a person shall not wilfully bury or procure to be buried the body of any deceased child as if it were stillborn," and then proceeds to say that the authorities controlling burial grounds shall not receive the body of a deceased child for burial as stillborn without certain prescribed evidence that still-birth has in fact taken place. Such evidence may consist of "a written certificate that such child was not born alive, signed by a registered medical practitioner, who was in attendance at the birth or has examined the body of such child." This was the certificate, presumably, which Mr. Ehrlich gave. In doing so he disregarded the importance of absolute truth and accuracy in such matters from a public point of view and the reliance placed by the Legislature upon the honour and accuracy of the "registered medical practitioner." It is also well to remember the concluding words of the section: "Any person who acts in contravention of this section shall be liable to a penalty not exceeding ten pounds."

The Beauty Specialist.

The action brought recently by a lady against a "beauty specialist" practising in Bond-street had as its result a verdict against the defendant for £500, with a statement by the jury that they considered her to have been guilty of fraud. The damages will hardly compensate the plaintiff for the disfigurement inflicted upon her by the defendant who, pretending to remove three small scars caused by small-pox, inflicted upon her a wound which but for the intervention of a medical man would have had even more serious results than in fact it did, and which, as it is, will leave a mark far more conspicuous than those which the "specialist" boasted herself able to nullify. Mrs. Heath, the plaintiff, may not perhaps be congratulated upon her wisdom in intrusting herself to an advertising quack, but she is at least to be commended for the courage with which she faced the ordeal of the witness-box, and the warning which she has thus publicly given to other women may save some from following her example. It is worth noting that the plaintiff had had her attention attracted to the defendant's professions of skill in the production of "beauty" by advertisements in newspapers devoted to supplying ladies with information as to the fashions and other subjects of special interest to them. The proprietors and editors of such periodicals, as anyone can see who chooses to read them, derive a large revenue from advertisements of "specialists" such as the defendant in the recent action, and they are not likely to consider the interests of their fair readers in preference to their own profits. Besides, however, inserting obvious and undisguised advertisements they allow and encourage the publication of articles laudatory of the quacks and their wares, in which the writers pretend to special knowledge of the efficacy of the methods which these important and lucrative advertisers employ and of the messes which they sell. The editor or proprietor of a newspaper is not necessarily responsible in all cases for the truthfulness of the statements made in the advertisements appearing in the portion of his paper devoted to them. It may, however, be suggested that his position may be different when he publishes an article in the body of his paper recommending in fulsome terms the advertisers' wares. He may not in so doing be guilty of conspiracy or of connivance with fraud, but is he not guilty of negligence if he has not ascertained or tried to ascertain whether what he publishes is true? The question may some day be answered by a person placed in the position in which Mrs. Heath found herself deciding that the damages which she hopes to obtain are more likely to be realised by suing a newspaper proprietor than by proceeding against a possibly impecunious "beauty specialist." The liability of the former may be moral rather than legal, but such a lawsuit as that suggested, if it were to reach the stage of being heard publicly, would be an awkward one to face.

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

IN 76 of the largest English towns 8058 births and 4964 deaths were registered during the week ending Nov. 14th. The annual rate of mortality in these towns, which had been equal to 15·3 and 15·0 per 1000 in the two preceding weeks, rose to 15·9 in the week under notice. During the first seven weeks of the current quarter the annual death-rate in these towns averaged 14·2 per 1000, and in London the mean rate in the same period did not exceed 13·6. The lowest annual death-rates in these towns last week were 6·9 in Handsworth, 7·5 in Leyton, 8·0 in East Ham, and 8·4 in Hornsey; the rates in the other towns ranged upwards, however, to 25·6 in Wigan, 27·0 in Huddersfield, 27·2 in Middlesbrough, and 31·1 in Rochdale. In London the death-rate during the week was equal to 15·4 per 1000. The 4964 deaths from all causes in the 76 towns showed an increase of 281 upon the number returned in the previous week, and included 434 which

were referred to the principal epidemic diseases, against 567 and 470 in the two preceding weeks; of these 434 deaths, 152 resulted from diarrhœa, 104 from measles, 60 from diphtheria, 45 from "fever" (principally enteric), 39 from scarlet fever, and 34 from whooping-cough, but not one from small-pox. The deaths referred to these epidemic diseases during the week were equal to an annual rate of 1·4 per 1000, against rates declining in the four preceding weeks from 2·0 to 1·5; in London the death-rate from these diseases last week did not exceed 1·3 per 1000. No death from any of these epidemic diseases was registered last week in Rhondda, Leyton, Wolverhampton, Northampton, Hornsey, or in ten other smaller towns; the annual death-rate therefrom, however, ranged upwards in the other towns to 4·1 in Wigan, 4·4 in Huddersfield, 4·9 in Rotherham, and 8·6 in Middlesbrough. The 152 deaths attributed to diarrhœa in the 76 towns showed a further decline of 37 from the numbers in recent weeks, and were fewer than in any week since the end of July; the highest annual death-rates from this cause during the week were 1·8 in Preston, 2·0 in Great Yarmouth, 2·3 in Smethwick, and 2·5 in Middlesbrough. The fatal cases of measles, which had increased in the seven preceding weeks from 31 to 99, further rose to 104 in the week under notice; they caused death-rates equal to 2·5 in Rotherham, 2·9 in Tottenham, 3·9 in Huddersfield, and 6·0 in Middlesbrough. The 60 deaths from diphtheria showed a further decline of 13 from the high numbers in recent weeks, the highest death-rates from this disease being 1·0 in Hull and 1·3 in Reading. The 45 deaths referred to "fever" showed a further increase, and exceeded the number returned in any previous week of this year; the death-rate from "fever" was equal to 1·1 in Bolton and 1·2 in Wigan. The 39 deaths from scarlet fever also exceeded the numbers in recent weeks, and caused annual rates of 1·1 in Salford and in St. Helens, and 3·0 in West Bromwich. The 34 fatal cases of whooping-cough showed but a slight increase upon the low number returned in the previous week, but showed an excess in Willesden and in Wigan. The number of scarlet fever patients under treatment in the Metropolitan Asylums and the London Fever Hospitals, which had steadily increased in the nine preceding weeks from 2855 to 3852, had further increased to 3861 on Saturday, Nov. 14th; the number of new cases of this disease admitted to these hospitals during the week under notice was 500, against 507 and 512 in the two preceding weeks. The deaths in London referred to pneumonia and other diseases of the respiratory organs, which had steadily increased in the four preceding weeks from 159 to 276, further rose to 310 in the week under notice, but were 23 below the corrected average number in the corresponding week of the five years 1903–07. The causes of 47, or 0·9 per cent., of the deaths registered last week in the 76 towns were not certified either by a registered medical practitioner or by a coroner. All the causes of death during the week were again duly certified in Leeds, Bradford, Hull, Newcastle-on-Tyne, Nottingham, Leicester, and in 51 other smaller towns; the 47 uncertified causes of death in the 76 towns included, however, nine in Liverpool, six in Sheffield, five in Birmingham, and four in Manchester.

HEALTH OF SCOTCH TOWNS.

The annual rate of mortality in eight of the principal Scotch towns, which had been equal to 16·2 and 15·4 in the two preceding weeks, rose to 16·9 in the week ending Nov. 14th. During the first seven weeks of the current quarter the annual death-rate in these eight towns averaged 14·5 per 1000, and exceeded by 0·3 the mean rate during the same period in the 76 English towns. Among the eight Scotch towns the death-rate during the week under notice ranged from 11·1 and 11·9 in Aberdeen and Perth, to 18·5 in Leith and 19·1 in Glasgow. The 597 deaths in the eight towns showed an increase of 54 upon the number returned in the previous week, and included 68 which were referred to the principal epidemic diseases, against 71 and 55 in the two preceding weeks; of these 68 deaths, 24 resulted from diarrhœa, 17 from whooping-cough, 12 from diphtheria, and eight from scarlet fever, but not one either from measles or small-pox. These 68 deaths were equal to an annual rate of 1·9 per 1000, which exceeded by 0·5 the mean rate from the same diseases in the 76 English towns. The deaths attributed to diarrhœa in the eight Scotch towns, which had been 34 and 29 in the two previous weeks, further declined to 24 in the week under notice, and included 12 in Glasgow, five in Edinburgh, and two each in Dundee, Leith, and Greenock. The 17 fatal cases of whooping-cough showed an increase of 11 upon the low number in the previous week; 13 occurred in Glasgow and three in Aberdeen. The 12 deaths from diphtheria exceeded the number in any recent week, and included four in Glasgow, three in Dundee, and two in Aberdeen. The eight fatal cases of scarlet fever also exceeded recent weekly numbers; four were recorded in Glasgow and two in Edinburgh. The deaths referred to "fever," which had been five and six in the two preceding weeks, further rose to seven last week, of which six were certified as enteric and one as cerebro-spinal meningitis; all these seven deaths referred to "fever" occurred in Glasgow. The deaths referred to diseases of the respiratory organs in the eight towns, which had been 56, 86, and 116 in the three preceding weeks, further rose to 126 in the week under notice, and exceeded by 22 the number returned in these towns in the corresponding week of last year. The causes of 27, or 4·5 per cent., of the deaths registered during the week in the eight towns were not certified; in the 76 English towns during the same week the proportion of uncertified causes of death did not exceed 0·9 per cent.

HEALTH OF DUBLIN.

The annual rate of mortality in Dublin, which had been equal to 16·0, 20·4, and 23·8 per 1000 in the three preceding weeks, declined again to 19·3 in the week ending Nov. 14th. During the first seven weeks of the current quarter the death-rate in the city averaged 18·8 per 1000, whereas the mean rate during the same period did not exceed 14·2 in London and 13·2 in Edinburgh. The 146 deaths of Dublin residents during the week under notice showed a decline of 34 from the high number in the previous week, and included eight which were referred to the principal epidemic diseases, against 11, 9, and 15 in the three preceding weeks. These eight deaths were equal to an annual rate of 1·1 per 1000; the rate from these diseases in the same week was equal to 1·3 in London and in Edinburgh. Of the eight deaths from these epidemic diseases in Dublin last week, four resulted from diarrhœa, two from "fever," and one each from measles and whooping-cough, but not one from scarlet fever, diphtheria, or small-pox. The fatal cases of diarrhœa and of "fever" showed a decline from the numbers in the previous week. The 146 deaths from all causes during the week included 30 of infants under one year of age and 31 of persons aged upwards of 60 years; both these numbers showed a considerable decline from those in the previous week. Three inquest cases and four deaths from violence were registered, and 61, or 41·8 per cent., of the deaths occurred in public institutions. The causes of seven, or 4·8 per cent., of the deaths in Dublin last week were uncertified; the proportion of uncertified causes of death in London last week did not exceed 0·1 per cent., while in Edinburgh it was equal to 4·5 per cent.

THE SERVICES.

ROYAL NAVY MEDICAL SERVICE.

THE following appointments are notified:—Staff-Surgeons: A. H. H. Vizard to the *Leander*, for duty with torpedo-boat destroyers; A. I. Sheldon, to R.N. Hospital, Portland; and C. T. Baxter, to the *President*, additional, for three months' course at Middlesex Hospital. Surgeons: W. R. Harrison, to the *Imogene*, additional, and on recommissioning, undated; T. A. Smyth to the *Vernon;* P. M. Rivaz to the *Speedy;* D. D. Turner to the *Espiègle*, additional, for Dartmouth College; and Herbert Stone to the *Cochrane*. The following have been entered in the Royal Navy as Surgeons, with seniority of Nov. 6th: W. A. H. McKerrow, F. G. Hitch, T. R. L. Jones, C. F. Bainbridge, J. Glaister, A. V. J. Richardson, F. H. R. Black, W. Mearns, A. C. Wilson, E. J. H. Garstin, F. W. Quirk, S. L. McBean, G. R. McCowen, and W. Bradbury, all to the *Victory*, additional, for course of instruction at Haslar Hospital, and J. H. Burdett.

INDIAN MEDICAL SERVICE.

Lieutenants to be Captains (dated Sept. 1st, 1908):—Cadwallader Edward Palmer, Carl Henry Reinhold, Broderick

Edward Middleton Newland, Lewis Albert Hodgkinson Lack, Kenneth William Mackenzie, Narindra Singh Sodhi, William Jackson Powell, and William Cowan Gray. The King has approved of the retirement of the following officers:—Lieutenant-Colonel Kavasji Cursetji Sanjana (dated Oct. 22nd, 1908); and Captain Donald Steel (dated Nov. 1st, 1908).

ARMY MEDICAL RESERVE OF OFFICERS.

Surgeon-Lieutenant-Colonel Quinton Chalmers, having resigned his commission in the Volunteers, ceases to belong to the Army Medical Reserve of Officers (dated Jan. 21st, 1908).

TERRITORIAL FORCE.

Infantry.

6th Battalion, Cheshire Regiment: The undermentioned officers, from the 4th Volunteer Battalion, The Cheshire Regiment, are appointed to the battalion, with rank and precedence as in the Volunteer Force (dated April 1st, 1908):—Surgeon-Captain Ralph Bennett Sidebottom and Surgeon-Captain Eugene Charles McCarthy. 4th (Denbighshire) Battalion, Royal Welsh Fusiliers: The undermentioned officers, from the 1st Volunteer Battalion, The Royal Welsh Fusiliers, are appointed to the battalion, with rank and precedence as in the Volunteer Force (dated April 1st, 1908):—Surgeon-Captain Richard Drinkwater and Surgeon-Lieutenant Jonas William Anderson. 4th Battalion, Welsh Regiment: The undermentioned officers, from the 1st (Pembrokeshire) Volunteer Battalion, The Welsh Regiment, are appointed to the battalion, with rank and precedence as in the Volunteer Force (dated April 1st, 1908):—Surgeon-Major Evan Evans and Surgeon-Lieutenant William Reginald Eyton Williams. 5th Battalion, Welsh Regiment: The undermentioned officers, from the 2nd Volunteer Battalion, The Welsh Regiment, are appointed to the battalion, with rank and precedence as in the Volunteer Force (dated April 1st, 1908):—Surgeon-Captain Rhys David Morgan and Surgeon-Lieutenant Evan James Trevor Jones. 4th Battalion, the King's (Shropshire Light Infantry): The undermentioned officers, from the 1st Volunteer Battalion, The King's (Shropshire Light Infantry), are appointed to the battalion, with rank and precedence as in the Volunteer Force (dated April 1st, 1908):—Surgeon-Lieutenant-Colonel and Honorary Surgeon-Colonel Frederick Knollys Pigott and Surgeon-Lieutenant William Dyson (to be supernumerary). Surgeon-Lieutenant-Colonel and Honorary Surgeon-Colonel Charles Henry Gwynn, from the 2nd Volunteer Battalion, The King's (Shropshire Light Infantry), to be Surgeon-Lieutenant-Colonel with the honorary rank of Surgeon-Colonel, with precedence as in the Volunteer Force (dated April 1st, 1908). 4th Battalion, Alexandra, Princess of Wales's Own (Yorkshire Regiment): The undermentioned officers, from the 1st Volunteer Battalion, Alexandra, Princess of Wales's Own (Yorkshire Regiment), are appointed to the battalion, with rank and precedence as in the Volunteer Force (dated April 1st, 1908):—Surgeon-Captain Harry Legh de Legh and Surgeon-Lieutenant Clarence Barns Whitehead. 2nd Battalion, The Monmouthshire Regiment: The undermentioned officers, from the 3rd Volunteer Battalion, The South Wales Borderers, are appointed to the battalion, with rank and precedence as in the Volunteer Force (dated April 1st, 1908):—Surgeon-Lieutenant-Colonel and Honorary Surgeon-Colonel James Rowlands Essex and Surgeon-Lieutenant Edward Meredith Griffith.

Royal Army Medical Corps.

Alexander Ogston is appointed to the Honorary Colonelcy of the Royal Army Medical Corps of the Highland Territorial Division (dated April 1st, 1908). Richard Caton is appointed to the Honorary Colonelcy of the Royal Army Medical Corps of the West Lancashire Territorial Division (dated April 1st, 1908).

For attachment to units.—Surgeon-Lieutenant-Colonel Frederick Henry Appleby, from the 4th (Nottinghamshire) Volunteer Battalion, The Sherwood Foresters (Nottinghamshire and Derbyshire Regiment), to be Lieutenant-Colonel (dated April 1st, 1908). Surgeon-Major Walter Moffett Hamilton, from the 3rd Volunteer Battalion, The Lancashire Fusiliers, to be Major, with precedence as in the Volunteer Force (dated April 1st, 1908). Surgeon-Captain William Hearfield Galloway, from the 2nd (Leeds) Yorkshire (West Riding) Royal Engineers (Volunteers), to be Captain, with precedence as in the Volunteer Force (dated April 1st, 1908). Captain William Young, to be Major (dated Sept. 25th, 1908). Lieutenant Robert Cross to be Captain (dated Sept. 25th, 1908). Surgeon-Lieutenant John Alexander Nixon from the 4th Battalion, The Gloucestershire Regiment, to be Lieutenant (dated April 1st, 1908).

3rd Highland Field Ambulance: The appointment to a Lieutenancy of Sidney Watson Smith bears date August 1st, 1908.

1st East Lancashire Field Ambulance: Captain Joseph F. Wright resigns his commission (dated August 29th, 1908).

3rd East Lancashire Field Ambulance: Captain Robert W. Beesley resigns his commission (dated August 20th, 1908).

5th London Field Ambulance: Lieutenant William Cameron Macaulay from the Royal Army Medical Corps, Territorial Force, to be Lieutenant (dated Oct. 7th, 1908).

3rd Welsh Field Ambulance: Surgeon-Major Arthur L. Jones from the 6th (Glamorgan) Battalion, Welsh Regiment, to be Lieutenant-Colonel (dated April 1st, 1908). Surgeon-Captain George A. Stephens from the 6th (Glamorgan) Battalion, Welsh Regiment, to be Captain (dated April 1st, 1908). Surgeon-Lieutenant Charles L. Isaac from the 6th (Glamorgan), Battalion, Welsh Regiment, to be Lieutenant (dated April 1st, 1908).

VOLUNTEER CORPS.

Rifle: 5th (Glasgow Highland) Volunteer Battalion, The Highland Light Infantry: Surgeon-Lieutenant-Colonel George Bell Todd resigns his commission, with permission to retain his rank and to wear the prescribed uniform (dated March 31st, 1908). 14th Middlesex (Inns of Court) Volunteer Rifle Corps: Surgeon-Captain Arthur M. Ware resigns his commission (dated March 31st, 1908). 2nd (Earl of Chester's) Volunteer Battalion, The Cheshire Regiment: The undermentioned officer resigns his commission, with permission to retain his rank and to wear the prescribed uniform (dated March 31st, 1908): Surgeon-Lieutenant-Colonel Alexander Hamilton. 1st (Brecknockshire) Volunteer Battalion, The South Wales Borderers: The undermentioned officer resigns his commission (dated April 1st, 1908):—Surgeon-Lieutenant William L. Pritchard.

At the Royal United Service Institution in Whitehall on Nov. 18th Colonel H. E. Rawson, C.B., R.E., read a paper entitled "A New Principle in Weather Forecasting and its Importance in Naval and Military Operations." Rear-Admiral A. M. Field, F.R.S., hydrographer of the navy, presided. We hope to publish the main points of the discourse next week.

Looking Back.

FROM

THE LANCET, *SATURDAY*, Nov. 20th, 1830.

ST. THOMAS'S HOSPITAL.

CLINICAL LECTURE

DELIVERED BY

DR. ELLIOTSON,

Nov. 8, 1830.

VARIOUS CASES.

HOSPITAL REGULATION RESPECTING POST-MORTEM EXAMINATIONS.

DURING the last week, Gentlemen, that is, since the commencement of the present month, eight patients have been admitted, five of them men and three women. The cases among the women were, one of phthisis, one of epilepsy, and one of rheumatism. Amongst the men were, one case of paralysis of the wrists from lead, one of acute inflammatory dropsy, one of colic from lead, one of chronic diarrhœa, and one of inflammation of the glands at the angle of the jaw.

.....

There has been one death. The patient was a woman, and the case one of apoplexy. There was, I am sorry to say, no inspection of the body. It is much to be regretted that in this hospital we cannot inspect patients who die without having first obtained permission from the friends.

Frequently a patient dies here in whose case we have for months used the utmost efforts to cure or relieve, and make an accurate diagnosis, and then no opportunity is given of proving the correctness of the diagnosis. I am quite satisfied that if patients or their friends were informed that people would not be admitted into the hospital, except in cases of accident or sudden illness, unless permission was previously given to inspect the body in the event of death, they would consent to it, and it would be done as a matter of course. Under the present circumstances, in a large number of instances, when permission is at first refused, it is given as soon as we offer money. But this is a bad habit, and I seldom yield to it. Again, in a large number of cases, the persons who refuse permission are not the immediate relatives, but mere acquaintances; and though the former would consent, the latter urge them to oppose the measure, for the mere purpose of looking friendly, or exerting influence and being busy. It frequently also happens that patients are never visited while in the hospital by either relatives or acquaintances, so long as they are alive, but as soon as they die, ten or twenty persons come forward to prevent the body from being opened. I am quite sure that if it were made a rule to admit none (except indeed urgent cases) but with the understanding that they should be opened if they died, it would be cheerfully assented to. I am satisfied that the public feeling would change on the subject,—that the world might be brought to consider that we had not paid proper respect to the deceased unless we had ascertained by examination after death, the precise nature and cause of the complaint, and communicated the true state of the inside to the friends. This is always done in the case of the highest personage of the kingdom; and every soldier is opened, and whatever may be the part of the world in which he may have died, an account of the inspection is transmitted to the army medical board at Woolwich. Unfortunately, many do not distinguish between dissection and inspection—do not know that while dissection means cutting up piece by piece, inspection is merely making a cut, looking in, and sewing the cut up again. Whenever I die I hope to be carefully inspected.

Correspondence.

"Audi alteram partem."

THE LATE SIR HENRY A. PITMAN: A CENTURY'S RETROSPECT.

To the Editor of THE LANCET.

SIR,—The student of historical medicine cannot but note the passing away of Sir Henry Pitman. The historic imagination covets landmarks, and a life which covered a century and was passed in association with many of the leaders of British medicine may afford us such tokens. By these we may be helped to discern the march of our art, its periods and its masters, during the last few generations.

Sir Henry Pitman was born in 1808, the year before the birth of Darwin and of Oliver Wendell Holmes. (Many other men of note were born in 1809—Gladstone and Lincoln, Tennyson and Fitzgerald and Poe, Mendelssohn and Chopin; it was a "year of momentous births," like 1769, when Napoleon, Wellington, and other famous men came into the world.) When Sir Henry Pitman was born our country was in the throes of the Great War. He was already seven years old when that war was closed by the battle of Waterloo, and the leaders of medicine and other sciences in our own land and France could once more come together. English savants were again welcomed by Cuvier and Berthollet, by Dupuytren and Laennec.

The period from the death of John Hunter in 1793 until 1820 may be called the Epoch of the Pupils of the Hunters—Baillie and Abernethy and Astley Cooper and the rest—as it was, perhaps, in the northern capital the epoch of the pupils of Cullen and of the Monroes. Young Pitman knew the generation that followed these—the era when in London Lawrence and Brodie, Bright and the younger Babington were in their prime. He had heard Guthrie lecture; he would tell how W. F. Chambers kept the notes of his cases in Latin, of the mordant eloquence of J. A. Wilson, of the elder Southey, and Billing, and Aston Key, and Clift, and many more. But Sir Henry Pitman's life was bound up with that of the Royal College of Physicians. Of his long years of service to the College he loved to speak and to tell how he had read through its centuries of Latin annals, how he spent long years upon their index, and how the Grant of Arms was once lost until the precious parchment was discovered by one of the Fellows in a casual shop. Sir Henry Pitman knew 13 successive Presidents of the College, from Halford who came to the chair in 1820 down to the distinguished holder of the office to-day. He was indeed examined by Sir Henry Halford in Latin for the College Licence. Thus through the life now closed we seem to be brought into touch with the courtly figure of that most aristocratic of physicians, the trusted adviser of four successive sovereigns, and the undisputed head of his profession in London for 20 years from the death of Matthew Baillie in 1823. Sir Henry Pitman knew Halford's successor, Dr. Paris, an accomplished chemist rather than a man of extensive practice, whose chief fame rests on his literary work in pharmacology. It was under Dr. Mayo that Sir Henry Pitman began his work as registrar of the College; he found his President keen and intelligent, despite a certain hesitation in his manner.

But the ideal President of all his experience was Sir Thomas Watson. He was, Sir Henry Pitman would say, a most amiable man, with a felicitous manner, the outcome of his own happy nature. "I never heard him speak an evil word of any one. Any letter he wrote was short and beautifully expressed. Sir Roundell Palmer, responding at a Harveian dinner, said that if he wanted happy expressions and good language he would go to the Royal College of Physicians." In Sir Henry Pitman's earlier days the President was still chosen, under statute of Henry VIII., by the eight College "elects" from among their own number; it was not until 1860 that the choice was given to the whole body of Fellows. At the date of his birth the College was housed in Warwick-lane; its removal to Pall Mall East was celebrated with much ceremony in 1825. The changes of the century may be illustrated from the College Pharmacopœias. That issued in the year after Pitman's birth introduced chemical nomenclature and admitted arsenic and digitalis for the first time: quinine, morphia, strychnia, and ergot had to wait until 1836.

No attempt can, however, be here made to measure the advances witnessed by our venerable friend during his long life. The stethoscope, the microscope, the thermometer, the testing of urine and of blood,—all these were brought into use in medicine within that century of life and they have opened up undreamt-of vistas in the science of our art. It may be that therapeusis has not kept pace with diagnosis, yet the age has been so full of expanding medical knowledge that to pass from 1808 to 1908 seems like going from darkness into light. What may be looked for in the century to come?

I am, Sir, yours faithfully,

London, W., Nov. 16th, 1908. R. HINGSTON FOX.

THE ETYMOLOGY OF ASPHYXIA.

To the Editor of THE LANCET.

SIR,—The difficulty in explaining how the word asphyxia has acquired its present meaning, "suffocation" or deprivation of air or oxygen, must have occurred to many of your readers. Asphyxia (ἀ priv. and Σφύξις the pulse) means pulselessness or stoppage of the pulse. Σφύξις is derived from *σφύζω* "to throb." But pulselessness is not a feature in what we call asphyxia, and under the heading Asphyxia in Sir James Murray's "New English Dictionary" the following comment on this discrepancy appears: "It indicates a curious infelicity of etymology that the pulse in asphyxiated animals continues to beat long after all signs of respiratory movements have ceased."

The possible solution of the difficulty is that the ancients, noticing that the arteries after death contained air and not blood, believed that during life they were air-ducts ramifying from the trachea called the "arteria aspera." Therefore, the word artery is probably derived from Ἀήρ (air) and *τηρέω* (I guard); and as the pulse-beat itself was attributed to the rebound of air or "vital spirit" in the arteries or air carriers it follows that the word asphyxia acquired the double meaning, stoppage of the pulse and deprivation of air. In the latter sense the term has survived. Thus an ancient error

is embalmed in a word in modern use. Artery has also been derived from ἀείρω (I raise) and from ἄλλομαι (I leap), but on the whole its derivation from Ἀήρ seems most likely to be correct. There is nothing novel, of course, in this supposition, but as far as I know no attempt has hitherto been made to reconcile the apparent discrepancy between the etymology and present meaning of the word asphyxia.

I am, Sir, yours faithfully,
LEONARD GUTHRIE.

Upper Berkeley-street, W., Nov. 16th, 1908.

THE CAUSE AND PREVENTION OF DENTAL CARIES.

To the Editor of THE LANCET.

SIR,—I have been much interested in reading Dr. J. Sim Wallace's article on the above subject which appeared in your issue of Sept. 12th. Dr. Wallace and Dr. Campbell have rendered a useful service in bringing this subject prominently before the profession, and nothing but good can arise from following out the principles there set forth.

May I, however, be permitted to state that the germ of most of Dr. Wallace's writings appeared nearly 30 years ago in my father's work on dental surgery[1] (see pages 103, 104, 105, 106, 107), although this germ has not been allowed to develop in present day text-books on dental surgery. For this reason it is all the more gratifying to see that the subject of diet in relation to dental caries and the effect of the former on the hard and soft tissues of the jaws and their surrounding parts has now been placed on a firmer basis, and perhaps this time to take root.

I am, Sir, yours faithfully,
F. COLEMAN.

London, Nov. 11th, 1908.

THE ELECTROLYTIC ADMINISTRATION OF DRUGS.

To the Editor of THE LANCET.

SIR,—Your interesting annotation on the above subject in THE LANCET of Oct. 31st, p. 1314, is evidence of the recrudescence of interest in cataphoric medication. In your number for Oct. 25th, 1890, p. 869, i.e., just 18 years ago, you did me the honour to publish a short paper on "Cataphoric Medication and Cocaine as a Local Anæsthetic," and I then endeavoured to show that the method there described had already passed beyond the stage of experiment into that of routine practice, at any rate in my own hands. Subsequently (March 13th, 1891), at the Society of Arts, under the distinguished presidency of Mr. (now Sir) William H. Preece, F.R.S., I demonstrated *practically* some of the powers of the cataphoric method; and again in a paper on "Some Therapeutical Applications of Continuous Current" read at the opening sessional meeting of the Therapeutical Society in October, 1904, I referred to some portions of the work I had done in connexion with the cataphoric and other powers of continuous current. (I am inclosing herewith a marked copy of this paper.)

For some 20 years, therefore, as shown, I have used cataphoric medication in my everyday practice, and I am somewhat amused, though interested, to note that the subject is now treated as *new* by Leduc, Jones, and others, presumably on the assumption that no work on the subject has previously been done. May I here say that the new term "ionisation" is scarcely comprehensive, and there are weighty objections to its use—except in so far as it implies a *part* of a process? In connexion with recent papers I note that the writers have not yet grasped the necessity for paying regard to antecedent *soakage* (as demonstrated by the late Mr. Lant Carpenter, Dr. W. H. Stone, and others), or to relative area of contact of the respective electrodes.[2] Too much stress has been laid upon "*ionisation*," which, though an essential part of cataphoric medication, is, after all, *only a part* and does not include the whole of the processes concerned.[3]

Verily, there is nothing new under the sun! Long before I attempted to employ medication by cataphoresis the late Sir Benjamin Ward Richardson and others in Germany and America had already carried their investigations into an advanced experimental stage.

With regrets for trespassing so far on your valuable space and my best thanks in anticipation,

I am, Sir, yours faithfully,
ARTHUR HARRIES.

St. James's-square, Pall Mall, S.W., Nov. 7th, 1908.

*** We remember our correspondent's interesting paper. We do not see that our annotation implied that either Leduc or Jones considers that cataphoresis is "new." Dr. Lewis Jones was using cataphoric medication by cocaine in 1899 at St. Bartholomew's Hospital. The originator of electrical medication was Fabre Palaprat, who wrote in 1833 on the introduction of iodine into the tissues by means of currents. In a bibliography of the subject given in 1900 by Professor Leduc, Dr. Harries's paper is mentioned and occupies the twenty-fourth place in chronological order.—ED. L.

A SERUM TREATMENT FOR CARCINOMA IN MICE.

To the Editor of THE LANCET.

SIR,—My attention has been called to Mr. C. E. Walker's letter in THE LANCET of Nov. 14th. I, too, would have hoped—had I given the matter a thought—that the discussion should have begun and ended with the meeting of the Liverpool Medical Institution (at which the paper in question was read by him) and the subsequent reports in those journals which thought the matter of sufficient importance to publish. It is contrary to the usual procedure to carry on a discussion in the medical press after a meeting unless material facts or arguments are wrongfully supplemented later in the report of that meeting. This did not occur.

I must deny any intention in my remarks other than that of impartial criticism of an important subject in which I am, as most of the profession are, much interested. Further, I have always held that to anyone who has a good case, knows his subject, and has the opportunity to reply, criticism should be welcome, in that it helps him to make good the weak points in that case. Mr. Walker failed in his reply to make a single point. He has since, I take it, worked the subject up; hence his letter.

Since he has alluded to the courtesy of the Medical Institution, which is justly proverbial, I presume he thinks my remarks were discourteous. I hasten to disclaim any intention of discourtesy at all. I would remind Mr. Walker that since *he asked to be invited* to read his paper he could not consider himself in the light of a distinguished guest. Had such been his position my remarks would have been in bad taste and uncalled for. While we are on this matter I must say also that in any circumstances I think the position of the Liverpool Medical Institution is such that he was ill-advised to read before it a paper which he had published in THE LANCET only a few weeks previously—it was hardly a compliment to the institution. I feel it necessary to say this much, and also to deny the insinuation that I abused the hospitality of the Cancer Laboratory. I was never Mr. Walker's guest, nor did he ever give me any mice. I grafted myself what mice I had from one kindly given to me by the director of the laboratory. These are personal details I am sorry Mr. Walker has dragged in. I have no wish in regard to the work of that laboratory but that some good should come out of it, and that the indefatigable energy of the workers there should meet with some reward. If he considers my remarks a "reflection" on the laboratory I can only reply that my intention was to save it from what happened recently on the publication of work done there in connexion with liquid air—work which was criticised in a similar manner by Dr. E. F. Bashford.[1]

Mainly my complaint was, then, that no reference at all was made by Mr. Walker to the work of others on similar lines (with the exception of a small experiment of Grünbaum done in the same laboratory). I carefully mentioned in my remarks that there *was* a difference in technique in some of the work but that there was no *essential* difference. The few remarks made in reply showed that with the exception of some of Borrel's work he was unfamiliar with, or ignorant

[1] Manual of Dental Surgery and Pathology, by A. Coleman, F.R.C.S., L.D.S. 1881.
[2] See Journal Institution of Electrical Engineers, vol. xix., No. 86.
[3] See Journal of the Society of Arts, No. 1999, vol. xxxiv., pp. 316-325.

[1] See THE LANCET, Feb. 1st, 1908, p. 394.

of, the enormous amount of work done by others on immunity and of the work which probably lies at the root of these experiments—I mean that done on cytolytic processes. Mr. Walker in his reply confessed, in fact, to ignorance in regard to this.

I hardly think it necessary to pick to pieces his criticism of my remarks, for he has so placed these, which were only published in brief abstract, out of the context, that I should have to write out what I said in full to make the position intelligible. To give an instance, surely "work on immunisation" is different from "immunisation," as quoted by Mr. Walker as a positive fact! I must therefore be general. In the first place, I never said that the results of the work of others coincided in every particular with the results of Mr. Walker's experiments—that would be too much to expect of any work—and I pointed out differences. In the second place I have a good imagination but I cannot recognise the ultimate difference between experiments on immunity and experiments on curative processes based on induced immunity. For Mr. Walker to say that experiments which "deal with the immunisation of mice beforehand to tumours which were subsequently introduced ..... have no bearing upon the treatment of already existing and well-established tumours" is—even if it were true, which it is not—to emphasise his ignorance of the nature of the process and the work done. Direct contradiction is given, if any were needed, by the experiments of Clowes and others on this very subject.

Then in regard to priority. In the historical portion of a paper by Bashford, Murray, and Cramer[2] they state that Jensen (in 1901) "observed the complete disappearance of tumours from mice that had been successfully inoculated. He added, however, that the 'results of attempts to cure mice of tumours have hitherto been uncertain.'"

Again: "Borrel ..... recorded suggestive experiments directed to obtaining a polyvalent immune serum against human cancer." Also: "Clowes ..... the animals in which spontaneous absorption had occurred were stated to possess a specific antibody in their serum which on injection into animals with transplanted tumours *exerted a curative effect*" (italics mine). And so on. There are several very important and interesting papers in the Third Scientific Report of the Imperial Cancer Research Fund dealing with the immunity established in rats to mouse tumours and the immunising effects of other tissues, including the work done with testis. Regarding Mr. Walker's claim to "cure" mouse cancer with "testis serum" I have already spoken—and the less said about it the better!

In conclusion, I only wish there were a hopeful outlook for the experiments, but I think if Mr. Walker will make himself familiar with work on cytolysins generally (of which he confessed ignorance) he will, when he fully understands all they imply, be as doubtful as other workers have been who have considered the question of making a cytolytic *serum* for human cancer on these lines. All my criticism would have been avoided if Mr. Walker had acknowledged the work of others—whether he conscientiously considered that he was first in the field or not. I make no attack on Mr. Walker and unwillingly allow myself to say this much in answer to his attempt to clear himself. I shall not, therefore, discuss the matter further.—I am, Sir, yours faithfully,

Liverpool, Nov. 14th, 1908. W. BLAIR BELL.

THE NEUROTONE.

To the Editor of THE LANCET.

SIR,—May I state in your able journal that I am not the inventor of "The Neurotone or Neurostone," as it is termed; but during many years of research work in electricity I have found it a perfect appliance to accomplish the object I had in view. I am, Sir, yours faithfully,

Ottawa, Nov. 4th, 1908. J. A. GRANT.

COW'S MILK: A SUGGESTION.

To the Editor of THE LANCET.

SIR,—I should feel very much obliged if some of your readers who have patients unable to take ordinary cow's milk would be so good as to try those patients with milk from cows which are not in calf. The milk that is supplied daily in this country is in 99 per cent. of cases obtained from cows in calf. My experience so far has been that patients, especially children, who were unable to digest the ordinary market commodity were when given milk obtained from cows not in calf able to take the latter and thrive on it. The difference between the two milks is considerable, as the drain of the embryonic calf must seriously interfere with the quality of the pregnant cow's milk.

I am, Sir, yours faithfully,

G. ARBOUR STEPHENS.

Swansea, Nov. 9th, 1908.

[2] The Natural and Induced Resistance of Mice to the Growth of Cancer, Proceedings of the Royal Society, B., vol. lxxvi., 1907.

BELFAST HEALTH COMMISSION.

(FROM A CORRESPONDENT.)

(*Concluded from p. 1483.*)

WITH reference to the deplorable state of affairs in Belfast pointed out by the recent Health Commission, that the corporation is without information as to the details of deaths occurring in its district beyond the mere numerical particulars obtained from the Registrar-General's official publication—information without which no sanitary authority can adequately search for, or cope with, causes of disease and death—it is clear the excuse of the committee of the corporation, that it is the duty of the Local Government Board to promote the legislation suggested by the Health Commission in this direction, is mere fencing with the question. The corporation of Belfast should itself promote a Bill and "the most effective and natural way of dealing with it (the question of vital statistics) is to follow the precedent of the English and Scottish Registration Acts, even if such a method involves fresh legislation; and we recommend that this should be done," says the Health Commission, and it further adds: "In view of the importance of the information as to the details of deaths occurring within the city, we regret that the corporation did not fall in with the suggestion made to them in October, 1907, by the Local Government Board for Ireland, which, pending legislation, would have enabled them to get the information desired." There can never be any proper public health administration in a city until the medical officer of health has trustworthy vital statistics, and, as the Health Commission reports, any health reforms attempted without such information must be in the nature of leaps in the dark. Imagine a city where, as the Health Commission says, the corporation does not know the causes of death among the children, where "the corporation are completely in the dark as to the places where deaths in the city are occurring, even from such important diseases as phthisis, tuberculosis, pneumonia, cancer, diarrhœa, or from diseases which may be due to industrial causes, to poverty, or to any of the other conditions which may be thought of as associated with modern town influences." Dr. H. Whitaker, the former medical superintendent officer of health, often drew attention to the defects in his sources of information; nay, more, Mr. H. W. Bailie, in his report just issued for 1907, says in reference to this matter, "We are where we were a year ago."

In the face of these facts, why does the corporation not promote a Bill itself and get this matter made right, which is the very foundation of public health, and put into its Health Bill all other matters—the control of the milk-supply, certain powers for sanitary administration (as advised by the Health Commission), the getting rid of the abomination of double tenement houses, the reorganisation of the antiquated system by which there is a medical superintendent officer of health and 14 district medical officers of health, so as to make the medical superintendent officer of health the real head of his department, with personal control of everything pertaining to the public health, &c., so as to place Belfast on the level, in public health administration, with any city in England or Scotland? When anyone suggests to the corporation of Belfast the trial of public health measures which have proved efficacious in other cities they always get the same answer, "We have no powers," and the bogey of the Local Government Board is trotted out. In reply, it may be said if you have not powers your duty is to get them. Sheffield and Bolton got special Acts passed to enable them to make pulmonary tuberculosis compulsorily notifiable, Manchester and Bristol went for special legislation on the milk question, and Huddersfield was complimented by a Committee of the House of Commons for leading

the way in promoting an Act for the notification of births of infants. Belfast can go for special Acts for its tramways, for its city hall, and for other objects, but alas, the illness and the deaths of its citizens from preventable diseases are apparently of much less moment. With reference to the shell-fish hypothesis as accounting for the existence of typhoid fever in Belfast, the committee in its report points out that in the year 1907 there were 356 notifications of enteric fever and of these only 14 were attributable by the patients or their friends to the eating of shell-fish; and it gives in the appendix articles by Professor J. Lorrain Smith and Professor A. E. Letts dealing with the question of the causation of enteric fever in Belfast. The matter may be left between the public health committee and the Belfast water commissioners, as the committee of the corporation is anxious to have a conference with the water commissioners in reference to another suggestion of the Health Commission that "the water-supply of Belfast should be in the hands of the corporation."

As to the conclusions and numerous suggestions made by the Health Commission in regard to the organisation of the public health department, they are dealt with in rather an extraordinary way by the combined committee of the corporation. To give some examples: The Commission says, "The hospital accommodation provided by the corporation for infectious diseases is inadequate and should be increased, and the guardians relieved of all responsibility for the treatment of these diseases."

In 1906 the Purdysburn fever hospital with 168 beds (there is an adjacent temporary hospital for small-pox with 74 beds) was opened, and, save the small-pox one, it was the first fever hospital owned by the corporation. There are 200 beds for the treatment of infectious diseases provided in the union fever hospital by the board of guardians. The committee says: "Hospital accommodation at present is more than ample. The union fever hospital has never in practice been regarded as a pauper institution." Now both these statements are inaccurate. The Health Commission reports (p. 74) that "even with the present use of beds in the union hospital the total provision of hospital accommodation is inadequate" and "partly as a result of the inadequacy of hospital accommodation a large proportion of the cases of infectious disease in Belfast has been treated at home," and of those left at home, the medical officer of health said at the Commission fully one-half were inadequately isolated. Further, the Commission recommends that not only should the corporation frankly accept sole responsibility for dealing with infectious disease within the city and make adequate provision for such cases as require removal to hospital. The union fever hospital, though an admirable place, has always been regarded as a pauper institution, as any medical man could explain as he finds the difficulty in getting patients to enter it. In his annual report for 1907 the medical officer of health states in reference to the fever hospital at the union workhouse (p. 40) "that a large number of the people was prejudiced against going there." Suppose, as occurred before, there were 400 typhoid cases, What would be the use of a hospital with 168 beds for all types of fevers except small-pox? To many of the other suggestions of the Health Commission the committee replies: "This is being done as far as practicable"; "The corporation has been working with this object for some years and has partly succeeded"; "Your committee concur in this opinion and steps have been, and are being, taken to give effect to it"; "This is also in hands"; "This is under consideration," &c. In other words, to all the admirable recommendations of the Health Commission, given with the object of trying to instruct the corporation in the simplest principles of sanitary science and public health, no proper or sufficient reply is given beyond they are "in hands," "under consideration," which really means that unless the Local Government Board or the public insist, little or nothing may be done to carry these suggestions into effect. Finally, with reference to house cleansing the committee says:—

> The substitution of water-closets for privies is recommended by the Commission as a great sanitary reform. They criticise severely the unpaved back passages, the defective ashpits, and insufficient cleanings, but they seem not to have realised the phenomenal rate at which the city has developed and of the difficulties of keeping pace with that development without overloading the city with taxation. All the up-to-date sanitary luxuries in the way of hospitals, elaborate systems of sanitary administration, and such like, would have been provided long ago if the people could have borne the burden; but while Belfast is a large and populous place, and its death-rate may compare favourably with that of English and Scotch cities, yet its municipal financial resources or the private resources of its citizens are far behind those of the cities on the other side of the channel.

There are several inaccuracies in this statement. 1. The growth of Belfast has never been so "phenomenal" as to prevent the adoption of proper sanitary arrangements had the various authorities done their duty, and the people would not have objected, as had various necessary public health measures been adopted step by step taxation would not have been great. Why was the Notification of Infectious Diseases Act never adopted until 1897, and why was a municipal fever hospital not opened until November, 1906? And why has the corporation not had a bed for a consumptive until October, 1908? 2. The death-rate of Belfast does not compare favourably with that of English and Scotch cities. Even adopting the hypothetical population assigned to it by the Health Commission (an estimate denied by the Irish Registrar-General who is the recognised Irish Crown authority on statistics), the general death-rate of Belfast is about the same as that of Manchester, better than that of Liverpool, and not so good as the other cities; that is only one large city in England or Scotland is worse; while from enteric fever and phthisis the death-rate of Belfast is not only excessive but far above that of any large city in England and Scotland; indeed, as the Health Commission puts it, "the mean annual mortality from enteric fever has been so exceptional in Belfast for the last 25 years that it appears to have no parallel in any other city or large town in the United Kingdom." 3. The municipal financial resources and the private resources of its citizens may be behind (not *far* behind as the committee states) those of the cities on the other side of the Channel but the recent erection of a new palatial city hall at a cost of between £300,000 and £400,000, the large expenditure on the asylum, and the publication from time to time of the wills of deceased Belfast citizens do not support the view that the people of the city could not and would not cheerfully have borne a taxation which would have had the effect of diminishing sickness and of preventing the deaths of many people from diseases now regarded as largely preventable. No person who has lived all his life in Belfast, and who has seen how neglected the science of public health has been from a corporation point of view, could accept any such excuse.

If the Belfast corporation, under wise and proper guidance, had exhibited any foresight and common sense, such as was displayed in other English and Scotch large cities, on behalf of the public health, and had it introduced one after another the ordinary preventive measures, and had it acted on the advice of its own committee (the "Harrison"), not only would the death-rate of the city have fallen as it has done in these other cities but any necessary taxation to carry out these schemes would not have been felt. It did not do so and as a consequence it finds itself forced now to face a number of problems (of which the greatest is the pollution of the shores of Belfast Lough by the sewage of the city) which will certainly, owing to its carelessness and neglect, be a much heavier financial burden. There is no help for it, for it is as true in municipal administration as in other affairs of life: "As you sow, so shall you reap"; and after all there is, if the corporation does not decide to solve these health problems adequately, only one alternative—more preventable deaths and more illness. It may readily be granted that recently there has been an improvement in dealing with some public health questions, and there is truth in what one of the city councillors said in the discussion on Oct. 22nd (as reported in a Belfast daily paper):—

> There were human beings living within half a mile of the city hall under conditions such as no self-respecting citizen would allow his dogs or animals to be congregated in. It was a credit to the health department that since the appearance of the Health Commission more real public health work had been accomplished by that department during the past two years than in any 25 years previously. He held that the public health department was never awake to its duty until the vision of the Commission appeared on the horizon, and every right-thinking citizen felt gratified at the result. If the work could be undertaken in a practical way in the beginning of 1907 what was to prevent it being taken in hand ten years ago? But for the action of certain public-spirited citizens that council would still be wrangling over the same questions as agitated the corporation ten years ago

A DORSET CENTENARIAN.—Mrs. Mansfield of Zeals, near Shaftesbury, Dorset, has just celebrated the hundredth anniversary of her birthday. She is a near relative of the late Queen Victoria's nurse, Lilley. The King sent a congratulatory message to Mrs. Mansfield.

THE INTERNATIONAL CONGRESS ON TUBERCULOSIS AT WASHINGTON.

(FROM OUR SPECIAL SANITARY COMMISSIONER.)

FESTIVITIES AT WASHINGTON.—PRIVATE RECEPTIONS AND THE SECRETARY OF STATE'S BANQUET.—A VISIT TO THE WHITE HOUSE.

New York, Oct. 13th.

IT was originally planned that during the week spent at Washington there were to be no festivities. The members of the Congress were to go to bed early and to attend exclusively to serious work. As might be anticipated this stern resolve broke down, at least to some extent. Not only were there a good number of private receptions but the Government itself gave a banquet in honour of the Congress. Mrs. Gardiner G. Hubbard provided motor-cars to take members to her country estate in the neighbourhood of Washington on the Wednesday afternoon. Unfortunately, this was the day of the joint meeting of the sections to hear the great discussion on Professor Robert Koch's opinions concerning the danger of bovine tuberculosis. As this discussion was prolonged till after 6 o'clock many people who had accepted were not able to avail themselves of Mrs. Hubbard's invitation. The same evening Dr. and Mrs. Charles W. Richardson were more fortunate in gathering in their house many members of the Congress. Already on the day of the opening of the Congress, on Monday, Sept. 28th, there had been a *conversazione* at the Corcoran Gallery of Art where the foreign delegates met their new American colleagues and renewed acquaintance with each other. Then the Cosmos Club very graciously made all the foreign delegates honorary members and several pleasant little dinners were given. But undoubtedly the greatest event of the week was the banquet given by the Secretary of State who in America is the next most important member of the Government after the President. In the new Willard Hotel, on the fourteenth or fifteenth floor, there is an enormous and lofty banqueting hall. What with the profusion of flowers and green garlands and shrubs, and even palm trees, it seemed at first as if we had arrived at one of the roof gardens that are becoming a feature in American life. But there were solid walls around us and even a gallery where the band was held in reserve to play various national anthems in honour of the foreign guests. After the guests had partaken of a substantial repast and various wines there followed the congratulatory speeches. Mr. Elihu Root, the Secretary of State, who to a large extent performs the duties of a Minister of Foreign Affairs, presided over the banquet and gave the foreign delegates an oppor tunity of admiring his eloquence. Naturally he made the first speech and he stated that it was on behalf of the Government of the United States, and still more on behalf of the people of the United States, that he wished to thank the members of the Congress for their devotion to the advancement of science. This cause had led many eminent authorities to travel a great distance so that they might contribute their share in reducing the burdens still borne by mankind. Mr. Root welcomed the men of science who had rendered the present age distinguished above all others for its science: "Citizens of lands, subject to many sovereigns, you come to us as soldiers of science and members of the same army, as you are all fighting the same foe and this on behalf of the same Republic of Learning. To whatever allegiance you may have subscribed you are all brothers in humanity." Mr. Root then proceeded to discuss the fact that progress seemed unattainable without incurring some loss. All refinements entailed the abandonment of those simple conditions in which health came and was maintained with but little effort. When we secured in our dwellings comfortable warmth we also created new conditions and these engendered new evils that necessitated the intervention of men of science to combat them. This struggle against disease is bringing about a union of mind and of hearts which will give birth to the brotherhood of man. Our united efforts will accomplish what was impossible whilst we were isolated. The individual man is no better to-day than he was 500 years ago, but he stands on the united, consolidated achievements of his predecessors and is therefore on a much higher level when he commences his individual effort. Thus man to-day can go far beyond the achievements of his ancestors. In the presence of the task now before the members of the Congress the ordinary work of government seemed unimportant. The congress was dealing with the very existence of man. On behalf of the Government, said Mr. Root, "we welcome you, we ask you to come again, we ask you to leave us your benediction as you go and to remember us kindly when you reach your homes." He thought appreciative Americans would feel the Congress was indicating a more humane and a more effective way of rendering mankind more efficient, while suffering less and living longer. Thus would the Congress contribute to raise humanity physically and morally.

Mr. Root, after the applause had subsided, called upon Professor Robert Koch who was greeted by the band with the "Wacht am Rhein" and with enthusiastic cheers from the audience. To the surprise of all, he delivered, in German, a humorous speech which is a sort of oratory that never fails to be well appreciated after a banquet. The Marseillaise and Professor Landouzy, Dean of the Paris Faculty of Medicine, followed. Professor Landouzy said that the French members were eager to see what in its youthful energy America had done, so they had crossed the Atlantic, the great ocean, "that brings us near more than it separates." After old Europe had learnt from America what could be done for agriculture, she had now seen the birth of young American science, a field where a rich harvest had also been gathered in. So active was the American radiography that it had brought into existence yet another milky way, and now to its 46 stars a brighter star was added which shone with the light of American science. Like the Magi from the East the delegates from old Europe came with the aurora of the rising day to salute the birth of American science.

As the band played "God Save the King" Professor G. Sims Woodhead rose and qualified the gathering as the apotheosis of the tubercle bacillus. This bacillus, about which they held divided opinions, was nevertheless destined to unite them all. They might argue about its character and origin but the more they differed the more they came together to discuss and they had the belief that these frequent international meetings all made for peace. Thus they would cherish tender memories of the tubercle bacillus long after it might have passed away, such as the memory of the warmth of the American welcome to that Congress. The British gave way to no one in their admiration for what had been done in the United States. Science was a great brotherhood but the Americans being more nearly related to the British they had a larger claim on the affections of the English people. All that had been done tended to bring closer together the two great nations which were united in the wish to preserve the peace of the world. In this policy no nation would join more heartily than the Mother Country on the other side of the water.

The representatives of Russia and Austria followed and then Dr. W. H. Welch (Baltimore) rose to explain that the Congress owed a great deal to Mr. Root, for he had befriended its promoters from the very first. At Paris it had been laid down that the invitation to meet in America could not be taken into consideration by the Second International Congress on Tuberculosis unless it was approved and endorsed by the American Government. There were only 24 hours to act, as the answer had to be sent while the Congress was still sitting in Paris. Fortunately, the Secretary of State granted an interview immediately. A mere statement of the case sufficed and a satisfactory cablegram was drawn up and sent to the American Ambassador at Paris. But for the active intervention of the Secretary of State it would not have been possible to carry the vote at the Paris Congress which decided where the third Congress should be held. Now that the Congress had met at Washington it had proved the means of enlisting the sympathy of the American Government and of the people. In America this was more important than in Europe, where it sometimes sufficed to obtain the help of a few persons in high authority. There never had been in the United States such a Congress and Dr. Welch added: "We have learnt more from you than you can possibly take away from us here." There was a flutter of excitement, especially among the French delegation, when the next speaker rose, for he was introduced as "Citizen Bonaparte, Attorney-General of the United States, and grandson of the King of

Westphalia." By this time, however, it was difficult for speakers to command the attention of the company, and therefore the banquet was soon brought to a close amidst much enthusiasm and many felicitations.

On Friday afternoon (Oct. 2nd) nearly all the members of the Congress went to the White House. Here a *queue* stretched from the street through the gardens and along the corridors of the Presidential residence. Most persons had to wait an hour and some longer before it was their turn to be ushered into the presence of the President and then, of course, there was no time but for the exchange of the briefest salutations. On the other hand, everybody who chose to wait received the traditional presidential shake of the hand and further was introduced to Mrs. Roosevelt. This ceremony gave an opportunity of seeing over a part of the more than modest residence of the President of the United States. It is certainly only just to call it the White House, for it is simply a house; there is nothing palatial about it.

On the same evening, and in the same great hall where the Secretary of State had given his banquet, there was "a smoker," as it was called. This was a tremendous gathering at which several thousand persons assembled, smoked, drank beer and punch, and ate refreshments dispensed from a large buffet. It was a good opportunity for conversation and for meeting old friends. This entertainment was offered to the Congress by the District of Columbia committee. On the Saturday afternoon the ladies' committee of the District of Columbia chartered a steamer and took a number of members on an excursion down the Potomac river. Altogether, therefore, the week at Washington was not absorbed entirely by study and discussion, for our American friends were not able to forbear from offering us the various kinds of hospitality which I have thus briefly described.

The Congress concluded on Oct. 3rd by a general session of valedictory addresses by the representatives of States and nations. Towards its conclusion President Roosevelt unexpectedly appeared on the platform and delivered an address in which he emphasised the need for the coöperation of practical men with men of science. The following week was devoted to the exhibits and a series of popular lectures and special meetings which attracted great attention in Washington. The need for a campaign of hygiene has been in part felt, and only this summer Dr. Woodward, medical officer of health, inaugurated a crusade against unclean lunch-rooms, but the doctrine of the open window, which has contributed so largely to the lowering of the death-rate in England during the last five years, has not in this part of the world yet received the acceptance which it merits. A series of lectures was then taking place in the public schools, and one day during the week was devoted to demonstrating the exhibits to the high school children of the city, who were conducted in sections and had the simple points explained to each one. The different Government departments were each allotted a special time for visiting the exposition; and even some of the large storekeepers permitted their employees to leave work in order to learn lessons conveyed by it. The ventilation both in the Government departments and in the stores is particularly defective in Washington. It is to be hoped that the lessons of the Congress on Tuberculosis will lead to more activity in a judicious provision of means of ventilation, at least during the winter. The Congress would indeed be a failure if in the very city where it was held some such practical benefit is not its outcome.

WORK OF THE SECTIONS.

THURSDAY, OCT. 1ST.

Immunity.

The production of immunity was discussed on Thursday morning, and some promising investigations were reported. The discussion began by a review of previous work by Dr. BALDWIN (Saranac). He considered that this work held out no prospect of an immunity of long duration, as even the dosage of living bacteria only protected for a time. He believed that a method of measurement must be devised. The problem was, firstly, one of creating tolerance for the bacillary poisons or products when undergoing autolysis and their assimilation by the tissues. Bartel's and Opie's studies on the influence of the white cells upon bacilli were very encouraging, and the present studies on anaphylaxis might add needed light. The present trend of investigation was to devise a method to meet the problem, for which solutions had been suggested, such as spacing the interval between inoculations (Pearson and Gilliland), feeding with the vaccine (Calmette and Guérin), inserting encapsulated bacilli (Heymanns), not to mention Pasteur's classical method of attenuation of virulence by passage through other animals. [In this connexion it was unfortunate that the Belgiln exhibit containing Heymanns's preparations was detained in New York for three weeks, and that the congressists were thus deprived of the remarkable specimens devised for the illustration of his method.]

Professor CALMETTE (Lille) recalled his famous experiments at the Lille Pasteur Institute but believed that the method there investigated was less desirable than the use of tuberculin, which was equally efficient and did not subject the subjects to the disadvantage of being the carriers of bacilli, which after six or eight months of quiescence were certain to give rise to active tuberculosis. In some of the cattle which were merely fed with tubercle bacilli, however, the glandular infection had disappeared after three or four months, while their immunity lasted over a year. This immunity, however, merely consisted of a temporary failure to react to an infection.

Dr. BARTEL (Vienna) described his method of attenuating bacilli by the action of lymphocytes.

Dr. COURMONT and Dr. LESIEUR (Lyons), from experimenting upon guinea-pigs with very virulent cultures of bovine bacilli, formed the opinion that a tuberculous lesion in process of evolution prevented a second infection.

Dr. WEBB and Dr. WILLIAMS (Colorado) and Dr. BARBER (Kansas) described their methods of producing immunity by inoculation of an increasing number of bacteria, beginning with a single organism. They indicated the analogy with vaccination against small-pox. By this method they had induced complete immunity in guinea-pigs and were now experimenting with rabbits. They had succeeded in introducing 10,000 organisms at once by subcutaneous inoculation without producing tuberculosis.

Dr. GABRILOWITSCH (Halila, Finland) using "tuberculinum purum," reported that great improvement occurred in 25 cases thus treated. In 59 per cent. of these the bacilli disappeared from the sputum, while they were much diminished in 21 per cent. The catarrhal symptoms in the lungs ceased in 75 per cent. and diminished in 25 per cent. The temperature became normal in 21 per cent. during the treatment and in 62 per cent. when the treatment was complete. The course lasted from 40 to 60 days and the dose was increased from 0·01 milligramme to 100–200 milligrammes, requiring about 20 injections. In 96 per cent. of the cases the weight increased from 1 to 6 kilogrammes. Tuberculinum purum induced von Pirquet's reaction and had the advantage of producing no annoying reactions.

Professor CALMETTE, after reviewing the modified tuberculins of Klebs, Buchner, von Behring, Béraneck, and others and the later attempts of Denys, Maragliano, and von Ruk, described his preparation known as Tuberculin CL. He claimed that 50 centigrammes might be injected at once into the jugular vein of an ox without any elevation of temperature. This was due to the absence from his preparation of the albumoses, peptones, glycerides, &c., which so often vitiated the test when other tuberculins were employed. His preparation, however, was so active that after a third injection, given at intervals of from 8 to 10 days, there was a severe reaction of 1·8–2·5, with elevation of temperature, just as if the animal were tuberculous. The animal, moreover, acquired a high resistance to tuberculous infection; e.g., a dose sufficient in control animals to produce miliary tuberculosis in six weeks, in this immunised animal will only cause a tuberculosis of slow onset. This substance was prepared by centrifugalising "entire" cultures of bovine bacilli *in vacuo* at a low temperature. The bodies of the microbes were removed by filtration and the filtrate was then cleared from precipitants and salts by the use of alcohol and ether and, finally, by re-solution in water and dialysis, the colloids which remained being again precipitated with alcohol and ether and dried. In this process no heat that could injure the active principle was employed. Its activity was estimated by direct inoculation into the brain of a healthy guinea-pig, as suggested by von Lingelsheim. In this manner he found 0·0008 milligramme to be fatal, whereas it required nearly ten times as

much of the alcoholic precipitate of Koch's old tuberculin to produce the same effect. Tuberculin CL was well borne by patients and the results had been good in increasing resistance and delaying the process of tuberculosis, though it was no more a cure than was any other similar substance. Very small doses, 1-1000th milligramme, must be used at the commencement until ultimately 3-10ths of a milligramme might be administered. A reaction exceeding half a degree C. was avoided by maintaining the intervals of from 10 to 12 days between the injections. Professor Calmette also strove to obtain a constant increase of the opsonic index. When studied experimentally *in vitro* tuberculin CL showed an affinity for the lipoids constantly present in the serum of tuberculous men and cattle. These substances were probably lecithins. In this connexion Professor Calmette alluded to his researches upon the activation of cobra-venin by the free lecithin of serum. Hence tuberculin CL afforded an index of the affinity of the patient's serum for the products of the tubercle bacilli, and this gave a valuable means of controlling medication by tuberculin, hitherto a most difficult matter.

The Bio-chemistry of the Tubercle Bacillus.

On the same day the biological chemists gathered in force and presented a series of papers upon the proteids of the tubercle bacillus, its immunising substances and enzymes, and upon the chemistry of the body during infection.

Dr. VAUGHAN (Ann Arbor) described his method of separating poisonous substances which would kill an animal in a few months in doses of from 75 to 100 milligrammes. The non-poisonous residue sensitised to the tubercle bacillus and was now being used in human cases of tuberculosis. It was yet too early to compare this method with older ones.

Dr. NOGUCHI (Japan) communicated through Dr. SIMON FLEXNER (New York) a lengthy study upon the action of soaps upon the vitality and immunising property of the bacillus tuberculosis. They were led to try this by the bactericidal activity and the complementary action of oleate soaps in conjunction with blood serum. They concluded that oleate soaps modified tubercle bacilli so that when subsequently inoculated into guinea-pigs they either failed to produce lesions or caused slighter ones than those shown by the control animals, with the result that death was postponed. These animals had acquired an immunity to virulent cultures, and either developed no lesions or far milder ones than did the control animals. The bactericidal effects of these soaps could not be reproduced by their component acids and bases. Dr. Noguchi believed that these lypoids were probably among the products of autolysis of lymph gland tissue which had been shown to be injurious to the bacillus tuberculosis by Conradi and Bartel.

Another paper from the Rockefeller Institute was that of Dr. EUGENE L. OPIE (New York), who had studied the enzymes of tuberculous tissue produced by inoculating the pleura. He found that the polynuclear leucocyte enzyme quickly diminished in activity after his inoculations. A second enzyme occurred in great abundance, only disappearing when caseation supervened. It digested proteid in weak acid media and it was probably derived from the epithelial cells of the exudate. These enzymes were inhibited by blood serum but not by that of the pleural exudate. Dr. Opie therefore believed caseation to be due to an autolysis by these enzymes when, through diminution of the vascular supply, they were no longer inhibited.

Dr. VON SCHRÖTTER (Vienna) reported an atttempt by Reitter and Stoerk to devise a means for the Diagnosis of Tuberculosis by a Serum Reaction. It consisted of a modification of the well-known method by carbolised sodium chloride. The precipitation of the colloids occurred in a higher percentage when an ethereal extract of tubercle bacilli was added to the solution in the proportion of ½ grain bacilli to 200 cubic centimetres of solution. In applying the method care must be taken to exclude such lipæmic conditions as diabetes, tumours undergoing regressive metabolism, and occasionally non-tuberculous infections. The method accordingly required confirmation by further trial.

A most valuable contribution to this subject was that of Dr. PAUL COURMONT (Lyons) upon the Agglutinating Power in Tuberculous Patients, with reference to Serum Diagnosis and Prognosis. He emphasised the indispensability of rigorous technique regarding choice of culture, its method of preparation, and the nature of the reaction in accordance with age and species, and he warned against its interpretation without coördination with the clinical symptoms. In suspicious cases positive reaction had great value. The information might be (1) general, where the information derived from it was equal to that of the conjunctival or cuti-reaction; but it did more, (2) for by testing the agglutinating power of serous effusions it assisted in locating the tuberculosis. The indication for prognosis was derived from the measure of agglutinative power, which was in inverse ratio to the virulence of infection. It was lacking in serious and advanced cases and increased during improvement.

Dr. ISHIGAMI (Osaka) followed with a paper in which he claimed to have succeeded in preparing two remedies of comparatively great efficacy and free from any detrimental reaction: (1) tuberculin-toxoidin, a chemical preparation from tubercle bacilli, suitable for incipient and apyrexic cases; and (2) an immunising serum for advanced cases. The former was used by injection in progressive doses. Under this treatment the body-weight and vital capacity increased, the bacilli broke down and agglutinated, the opsonins increased, and early cases were completely cured in from three to six months, and later cases also when the general nutrition was good; recurrences were rare. Statistics were given showing that the average number of injections required was 65. By the use of tuberculin-toxoidin in animals he had obtained an immunising serum which no longer caused the characteristic troublesome reactions in patients, and he claimed to have cured three cases of comatose cerebral meningitis with this serum.

Dr. CROFTAN (Chicago) presented an abstract of his studies on the Calcium Metabolism in a Case of Tuberculosis. He believed that the increased urinary excretion of calcium was due to its affinity for the deutero-albumose present in tuberculous foci, sputum, blood, and urine. This was a protective reaction, for experiments showed that the "pyrogenic" effects of this albumose ceased when it was combined with calcium. The therapeutic possibilities of this were indicated by a seeming immunity amongst workers in lime salts.

Dr. G. BERNHEIM and Dr. P. BARLIER (Paris) presented a joint report upon the Therapeutical Value of Tuberculins. This was opened by a comprehensive historical survey of the search for a specific remedy for consumption the world over, and was followed by a consideration of the therapeutic value of the various active and passive methods of producing immunisation which had been proposed. As regards passive methods, Dr. Bernheim and Dr. Barlier, relying upon the recent works of Bordet on immunity, agreed with Professor Sahli in thinking the future of serum-therapy in a chronic affection like tuberculosis to be at the least doubtful. Amongst the numerous products proposed for active immunisation Dr. Bernheim and Dr. Barlier treated only of the most important—those which had been the object of sufficient experimental and clinical researches. They devoted to each one a detailed study, examining one after the other their nature, their mode of preparation, their physiological properties, the doses and the methods of employment, the indications for their use and their dangers, and summarised their respective therapeutic value. They examined in succession the first tuberculin of Koch, the tuberculin T.R. of Koch, the bacillary emulsion of Koch, the filtered bouillon of Denys, the tuberculin of Maréchal, the tuberculin of Béraneck, and the tuberculin of Jacobs. From the comparative study of these different tuberculins they concluded that those which contained the toxins present in the bacilli themselves (tuberculins of Béraneck and Jacobs) possessed the most active immunising properties. They had not had occasion to experiment personally with Béraneck's tuberculin. As to the tuberculin of Jacobs the very numerous observations (amounting to hundreds) which they had collected in their anti-tuberculous dispensaries showed at the same time the perfect innocuousness of this product and its remarkable activity in the most different manifestations of the tuberculous infection. They considered that Wright's opsonic method allowed of the exact observation of the degree of immunisation of the organism, and would be "a precious guide in deciding the question of the doses to employ and their progressive elevation. Thanks to this method the employment of tuberculin is not an empirical treatment but it is founded upon a really scientific basis."

CLINICAL CONTRIBUTIONS.

Beyond the discussion upon the relation of bovine and human tuberculosis, the main trend of the Congress concerned the sociological aspect of tuberculosis. There were, however, several interesting contributions in the clinical sections, the most novel perhaps being that of Army-Surgeon WRIGHT before Section II. It was an account of the treatment of over 60 cases by intramuscular injections of the salts of mercury, to which he was led by the amelioration of the pulmonary lesions in two cases which he had treated for secondary syphilis. The remarkable rapidity of the retrogression of the disease in these men led Dr. Wright to try the treatment in non-syphilitic consumptives. His success was nearly uniform, even advanced cases improving rapidly, and laryngeal lesions constantly disappearing. It does not appear possible to gainsay Dr. Wright's observations, although former clinical experience indicated that subjects of tuberculosis bore mercury badly. It is possible, however, that this intolerance may have been due to digestive disturbances caused by mercurial ingestion *vid* the mouth preventing the high nutrition required by consumptives; and, moreover, the hygienic conditions under which consumption was formerly treated were not of the tonic character needed to enable mercury to act beneficially. Further trial, of course, is required before scepticism is allayed, but Dr. Wright's discovery seems to be an exceedingly valuable therapeutic advance.

Another valuable addition to our armament was contributed by Dr. G. BECK (Chicago) in Section III. He has devised a paste with which he keeps apart the granulating surfaces of tuberculous sinuses, by which means they heal without leaving the annoying residual foci which so usually cause relapses. The paste contains 33 per cent. of bismuth and thus affords a means of mapping out a sinus with the x rays. For cold abscesses a paste of 10 per cent. is used, being injected immediately after evacuation. This prevents secondary infections as well as keeping the surfaces apart. The clinical reports are exceedingly favourable.

In this, the surgical, section great emphasis was laid upon the nutritional adjuvants, and indeed sanatoriums for this purpose are now being erected in the United States.

In Section II. the discussion of sanatoriums was largely contributed to by the British representatives. The graduated labour method of the Brompton Hospital excited much interest. Great stress was laid on the undue cost to the community entailed by sanatoriums unless they are correlated with other agencies for the control of tuberculosis. Emphasis was laid upon the need of this in a lecture before the Washington Chamber of Commerce by Dr. R. W. PHILIP (Edinburgh), and an elaborate model was shown in the Maryland exhibit to illustrate the same point. With the medical officer of health for a centre, different coloured threads, centrifugal and centripetal, communicated with the general hospital, the family physician, the county poorhouse, the tuberculosis dispensary, and the special sanatorium respectively. The life insurance system which is in such successful operation in Germany was illustrated by a model of its large chain of sanatoriums and furnished clear explanations of the economic features of the plan. In a small way, though administered by a private association, the National Printers' Union furnished the same object-lesson by exhibiting a model of the annexe for tuberculosis of the Printers' Home in Colorado. The style of tent there used is now to be shown in the travelling exhibit of the American National Tuberculosis Association.

The results of sanatorium treatment were discussed by Dr. BROWN (Saranac). He presented statistics showing that out of 2553 patients, 1209 are known to be alive, of whom 1058 are able to work—that is, 87·5 per cent. He believes that these results are very encouraging.

An important adjuvant to the dispensary is presented by the experience of Dr. TOWNSEND (Boston) and Dr. WHITE (Pittsburg) who have planned respectively "day camps" and "night camps," and who discussed before Section II. their educational and economic value. These are now being imitated elsewhere and appear to be of great assistance to dispensaries.

The practical results of serum-therapy were contributed to in Section II. by a large number of workers, including Dr. FLICK (Pennsylvania), Dr. TRUDEAU (Saranac Lake, N.Y.), Dr. DENYS (Louvain), Dr. BÉRANECK (Neuchatel), and others. The collation of their work should afford additional guides for future practice but cannot be undertaken in a short contribution of this nature. In this section, too, the early use of the x ray for diagnosis of deep infiltrations was insisted upon by Dr. C. THEODORE WILLIAMS (London), Dr. RIST (Paris), and Dr. WILLIAMS (Boston).

A distinct therapeutic advance is the systematisation of diet schedules attempted by Dr. FISHER (Yale) and Dr. NEWTON (Mont Clair). The former investigated the diet used in 95 leading sanatoriums in the United States, Canada, Great Britain, France, Germany, Austria, Norway, Switzerland, and Russia. He finds that the food is usually given arbitrarily and does not differ from that used in neighbouring boarding-houses; that the number of calories varies from 2100 to 5500; and that the amount of protein differs as widely. He concludes that 3000 calories, of which only 10 per cent. should be protein, are ample for an ordinary consumptive; that an excess is injurious on account of the intestinal putrefaction which results, especially in the case of meat, on account of the waste products therein contained. Dr. Newton emphasised the reaction against the "stuffing" treatment formerly in vogue.

In the section of Children's Diseases Dr. WOODS-HUTCHINSON (New York) expressed his belief that even in infants the lung is the most frequent site of tuberculous involvement and that pulmonary tuberculosis is much commoner in them than was formerly believed. He believes the gland and bone involvements to be secondary. Dr. WOLLSTEIN (New York) as a result of 1131 necropsies, of which 185 were tuberculous, expressed the same belief.

The subject of the children of the tuberculous and their infection and relative immunity was discussed from different points of view by Dr. WARTHIN (Ann Arbor), who believed that the bacilli might traverse the placenta without causing lesions there. But Dr. FLOYD and Dr. BOWDITCH (Boston), as a result of a study of 900 children who had been exposed to home infection, concluded that contagion is a more important factor than heredity.

Dr. VON PIRQUET (Vienna) proposed the formation of an international statistical record on the basis of his cutaneous reaction, the cases being divided into those of (1) early reaction, signifying recent infection; (2) secondary reaction, signifying old or latent infection; and (3) no reaction (uninfected).

Dr. TEISSIER (Lyons) believed, as a result of his studies of intermittent albuminuria of childhood, that these cases were often due to the transmission to the fœtal kidney of the tuberculous toxin of an infected parent. "This produces," he said, "a slight degree of latent nephritis which results in a very relative impermeability, revealing itself in a moderate diminution of the total molecular diuresis, an increase in the coefficient of Korany, and also in a slight elevation of the blood pressure, a moderately severe albuminuria, usually intermittent, either of the matinal (morning) type, or frankly orthostatic (present during the active hours of the day); and finally, as the hall-mark of its tuberculous origin, a well-defined Arloing-Courmont serum reaction often exceeding 1/15." 34 per cent. of cases of intermittent albuminuria were of this type. They did not become tuberculous and were thus distinguished from the pre-tuberculous albuminuria, which disappeared as the lesions became evident. They were examples of the spontaneous immunisation to which Courmont had drawn attention.

Mrs. NOBLE (New York) referred to the importance of the control of respiration by the instinctive functioning of the afferent nerves of the respiratory system, including the olfactory; and pointed out how the vitiation of this reflex by foul air prevented the proper development of the chest by the deep breathing required for it. She proposed to found a league for popular prevention of nasal and pulmonary troubles in children.

Cattle and Tuberculosis.

In Section VII. many valuable data were presented regarding the control of animal tuberculosis with special emphasis upon the economic aspect. Dr. MELVIN, of the United States Bureau of Animal Industry, estimated at over $2,382,000 the loss due to the destruction of meat-producing animals as a result of Federal inspection. He believed that a further $2,000,000 would be lost if all the animals were inspected and that the stock was rapidly diminishing in value. The loss from disease in milk production was estimated at $1,150,000. The aggregate from all sources he estimated at $14,000,000. He advocated the system of tagging, and for

valuable animals the Bang method.—The tagging system, too, was advocated by Dr. ROGERS (Kansas), who pointed out that metal ear tags with the address of the original owner of swine sent to slaughter-houses would enable the health officer to locate automatically the centres of tuberculous infection among cattle.

Dr. DYSON (Chicago) drew attention to livestock journals and breeders of pedigree stock as well as the organisers of expositions and fairs. All of these, for financial considerations, he said, "attempt to discredit the accumulated knowledge of time and a host of pioneers in the field of research and experiment with reference to the efficiency of tuberculin as a diagnostic agent, when properly administered."

Dr. POPE (New Jersey) submitted the farmers' point of view; and after explaining the causes of their hostility or indifference, and discussing the incidence of the cost of stamping out tuberculosis, advocated the fixing of a time limit after which the cost of compulsory destruction should no longer rest upon the State but upon the careless individuals. In this way a stop would be put to the present increase of tuberculosis among domestic animals which was now occurring in spite of its decline among human beings.

Dr. WARD (San Francisco) showed how, in spite of the open-air life led by dairy cattle in California, about 30 per cent. of over 1000 cows reacted to tuberculin and that 82 per cent. of the herds were infected. The correspondence of this result with the figures found in New York State, where the conditions as regards stabling were so different, showed that even the mild climate and out-of-door life had not counteracted the unskilful handling which permitted of this amount of disease.

The investigation of Dr. DALRYMPLE (Louisiana) into the conditions of 12 Southern States showed that the prevalence and increase of tuberculosis were almost wholly among stabled cattle, and that the native cattle were practically free although there was practically no legislation dealing with tuberculosis in cattle. In his own experiment station there had been no cases since the herd was tested and the diseased animals were eliminated 10 years ago.

Dr. MOHLER and Dr. WASHBURN (Washington) reviewed the recent investigations of the United States Bureau of Animal Industry and declared their resulting belief that the bovine, human, and avian types might interchange characters in favourable conditions in other hosts. They claimed that they were the first (in 1896) to differentiate the bovine type.

Dr. SCHROEDER (Maryland) drew attention to the intermittent passage of tubercle bacilli per rectum in about 40 per cent. of cattle apparently healthy, which, however, had reacted to tuberculin. Two years' observation of these animals doubled the percentage in which at one time or another organisms were found in the fæces. As it was rare to find commercial milk free from fæcal contamination and as a great deal of mixing occurred in the dairies it was certain that a wide distribution of bovine bacilli insured their introduction into human beings.

Dr. HESS (New Jersey) stated that by inoculation he had found that 16 per cent. of samples of New York milk contained tubercle bacilli.

The problem of control was discussed by Dr. REYNOLDS (Minnesota), Dr. HUGHES (Cornell), Dr. KLEIN (Pennsylvania), Dr. MARSHALL (Philadelphia), and Dr. MOORE (Ithaca), and great stress was laid upon the value of tuberculin. In this section, too, researches upon the dermo-reactions were presented by Dr. LIGNIÈRES (Argentina), Dr. MOUSSA (Alfort), and Dr. MANTUX (Canne le Cannet), and upon the ophthalmic reaction by Dr. BELLART (France) and Dr. WHITE and Dr. CAMBELL (Ohio). These results were confirmatory of those established in human beings.

(To be continued.)

BIRMINGHAM.

(FROM OUR OWN CORRESPONDENT.)

University News.

THE Huxley lecture is to be delivered this year by Professor Ronald Ross who will give an address on malaria on Nov. 25th. His subject is one that has great interest for the medical profession and the demand for seats will probably exceed the capacity of the hall in which the lecture will be given. Professor A. Bostock Hill has resigned his lectureship in toxicology which he held in association with his chair in public health and the vacant appointment has not yet been filled; but the vacancy caused by the resignation of Mr. George Heaton, the assistant to the chair of surgery, has been filled by the appointment of Mr. Leonard P. Gamgee who is one of the assistant surgeons at the General Hospital.

The Medical Inspection of School Children.

At the annual meeting of the Midland branch of the Society of Medical Officers of Health recently held in Birmingham the President, Dr. Reginald Green, summarised the results which had been obtained in King's Norton, where he is medical officer. He stated that a systematic test of the eyesight of 7412 children revealed defects in 1140 cases. The time taken in the examination of the cases was necessarily considerable, but the difficulties of the work were greatly exceeded by the trouble which was incurred in attempting to get the defects remedied, for it was found that only 11 per cent. of the parents communicated with had provided the necessary spectacles after a reasonable lapse of time. The general examination of the children revealed that 71 per cent. had defective teeth, 28·7 per cent. enlarged tonsils, 19 per cent. verminous heads, 10 per cent. some amount of lateral curvature of the spine, and external eye disease was present in 7 per cent. During the course of the meeting the large amount of work which is being thrown upon local hospitals, as a result of the inspection of children, was referred to and it was suggested that the education authorities should contribute to the local hospitals. This suggestion is one of the natural results of the Act, and the question it leads to, that of the nationalisation of hospitals, will become more prominent and pressing as the work of inspection is carried on and elaborated. The results of the examination at Smethwick differ somewhat from those obtained in King's Norton, judging from the interim report presented by Mr. W. F. Marsh Jackson, the chief medical inspector. The total number of children inspected was 2939, and of these about 10·5 per cent. had defective vision, 15·6 per cent. defective teeth, 4·1 per cent. defective hearing, and 8·3 had enlarged tonsils. 100 congenital deformities were noted, including 11 cases of lateral curvature of the spine, and eight children were mentally deficient. The condition of the children's hair, especially that of the girls, was bad, otherwise bodily cleanliness was generally good, and only 15 cases of skin disease were noted. Up to the present the education committee has taken no official action with regard to the treatment of sickness and physical disability, but the Children's Hospital Benevolent Fund had enabled letters for the Birmingham Eye Hospital to be given to special cases.

The Adult Cripples' Guild.

An earnest appeal is being made by Sir Hallewell Rogers for increased financial support for the Adult Cripples' Guild. The objects of the guild must appeal to all: they are to find situations for those who can go out to work; to teach handicrafts to those who cannot go out and to dispose of the work done; and to obtain from the hospitals the best medical advice and to help to get the instructions carried out. Lack of funds is at present interfering with most of the objects, and it must be sincerely hoped that the income of £203 7*s.* 3*d.*, which was all the guild obtained in 1907–08, will be considerably increased this year.

The City Analyst's Report.

The last quarterly report of the city analyst (Mr. J. F. Liverseege) is distinctly favourable as it appears to indicate a decided diminution of the adulteration of foods. 458 samples were taken and examined under the Sale of Food and Drugs Act and only one was adulterated with preservatives and only 5·7 per cent. of the samples were adulterated in other ways than by preservatives. Both these results are distinctly better than in previous third quarters. Only 13 of 189 samples of milk contained less than 11·5 per cent. of solids and only one sample contained boric acid. In two cases in which samples of milk were deficient in fat it was found that the cows were only being partially milked, the remainder being left for the calves, and when samples of the "fore milk" were analysed they were proved to contain only 1·7 per cent. and 1·8 per cent. of fat respectively, from which it

appears that a farmer who sells "fore milk" renders himself liable to prosecution for deficiency of fat, 3 per cent. being the limit set by the Board of Agriculture.

Hospital Saturday Collections at West Bromwich.

The total amount raised during the year was £2207, of which £2153 were paid to the hospital. This is a slight advance upon the previous year. There were increased subscriptions from the works in the district, the Wednesbury Committee also collected a larger amount than in previous years, and there would have been a much better result than that actually obtained had it not been that the receipts from the charity sports fell much beneath expectations.

Nov. 17th.

LIVERPOOL.

(FROM OUR OWN CORRESPONDENT.)

The Liverpool School of Tropical Medicine.

ON Saturday last, Nov. 14th, the twenty-first expedition of the Liverpool School of Tropical Medicine left Bristol for Jamaica by the s.s. *Port Henderson* belonging to the Imperial Direct West India Mail Service Co., Limited. The expedition consists of Mr. R. Newstead, M.Sc., A.L.S., F.E.S., lecturer in economic entomology in the University of Liverpool, and Dr. W. T. Prout, C.M.G., late principal medical officer of Sierra Leone. Later the expedition will be joined by Mr. A. H. Hanley, C.M.G., late principal medical officer, Southern Nigeria. The objects of the expedition are twofold, as it is partly medical and partly entomological. Mr. Newstead will undertake the following duties: 1. To study the bionomics of cattle ticks and to advise some methods of control. 2. To undertake the investigation of those scale insects which are at the present moment threatening the citrus and cocoa and coco-nut cultivation in the Island of Jamaica, and to advise some method of control. 3. To make a collection of the biting flies and ticks of the island for the use of students attending the course of instruction at the Liverpool School of Tropical Medicine. Dr. Prout and Mr. Hanley will investigate the following points—viz.: 1. The prevalence of filaria in Jamaica. 2. The prevalence of malaria in especially malarious districts of the island. 3. Measures for prevention of mosquito-borne diseases where feasible. 4. Preliminary investigation into the so-called "vomiting sickness" amongst children. Sir Alfred Jones entertained Dr. Prout and Mr. Newstead at luncheon a few days before the expedition started, a large party being present, among whom were Sir Henry Blake, ex-Governor of Jamaica, Sir Edward Evans, Sir Rubert W. Boyce, and Professor Ronald Ross. During the luncheon a telegram was received from Colonel Seely, wishing the expedition all success.

Lancashire's Birth-rate: the Lowest on Record.

The lowest birth-rate on record, reduced infant mortality, and a lower general death-rate are the leading features in the annual report of Mr. E. Sergeant, medical officer of health of Lancashire. The death-rate of the year 1907 was 14·4 per 1000 of the population, which is fractionally less than in 1906 and 1·6 below the average for the ten years 1897–1906. The infant deaths under one year were 125 per 1000 births, a decrease from 139 in the previous year, the average for the ten years being 154. Although a falling birth-rate is usually accompanied by a reduced infant mortality evidence is not wanting that conditions affecting infant life, both in the home and home surroundings, are much better than a few years ago. The birth-rate, equal to 24·23 per 1000 of the population, is the lowest recorded and shows a decrease of 0·76 compared with 1906 and 2·34 compared with the ten years 1897–1906. The birth-rate of the county is 2·1 per 1000 below the rate for England and Wales.

Plague in Liverpool.

At a meeting of the health committee held on Nov. 12th the chairman, referring to the cases of plague which had occurred in the city, assured the citizens that they could rest content that the port sanitary authority was doing everything possible to arrest the spread of the disease. It was a matter of great importance to the port. He had been in touch with the medical officer of health and the disease was being carefully watched. The disease had been practically confined to one coal barge and he stated that the port appeared to be now quite safe and out of danger. Last year the death-rate of the city was low and this year he thought it would be a shade lower.

Sir William Hartley and the Municipal Treatment of Tuberculosis.

Speaking at a dinner in honour of Alderman Menlove, the chairman of the health committee, held on Nov. 12th, Sir William Hartley made a strong plea for the municipal treatment of tuberculosis, and advocated the provision of a sanatorium for working-class patients from Liverpool and the provision of a fund for maintaining the families of working men while under curative treatment in an early stage of the disease. Towards such a fund he offered to subscribe £5000 provided an additional £10,000 were subscribed within a reasonable time when the scheme was matured.

The Hospital Saturday and Sunday Funds.

The Liverpool Hospital Saturday and Sunday Funds have made their final apportionment of the 1907-08 collections, the sums, which are supplementary to earlier distributions, ranging from £1240 to the Royal Infirmary to £14 19*s.* to the St. George's Skin Hospital. The total of the present contributions is just short of £6000, the earlier distributions amounting to £10,000. The total amounts contributed to the various hospitals reached the sum of £15,980.

Nov. 17th.

NEWCASTLE-UPON-TYNE.

(FROM OUR OWN CORRESPONDENT.)

Sir Thomas Oliver.

Dr. Thomas Oliver will be most heartily congratulated upon the conferment of the honour of a knighthood upon him by the King. Dr. Oliver's work in connexion with industrial diseases was specially mentioned by the King in his speech at the opening of the new buildings of the Royal Infirmary on the Town Moor in July, 1906, and the present further acknowledgment of the position held by Sir Thomas Oliver in that branch of medical science will be received by all who know him or his work with very great pleasure and satisfaction. I cannot refrain also from congratulating the College and infirmary upon the fact that the work of two of their members has within so short a space of time been recognised in so signal a manner, for it is but a couple of months since Professor George R. Murray left this city to accept the invitation of Manchester to occupy the chair of medicine in its University. The honour which Sir Thomas Oliver has now received at the hands of the King, coupled with the recognition given to his work by the profession in selecting him as the President of the Section of Industrial Diseases at the last meeting of the British Medical Association at Sheffield, also raises another point—viz., the question of the teaching of industrial diseases. This branch of medical knowledge is almost, if not entirely, ignored in the ordinary course pursued by the student reading for his qualifications to practise medicine, and that in spite of the fact that, in the large industrial towns at least, a large part of the disease which the general practitioner is called upon to treat is, now that the "zymotic" diseases are cared for by the State, more or less directly connected with the occupation followed by the patient. The time has certainly arrived when the influence of occupation upon the health of the worker should be more closely studied and the results already obtained made more readily accessible to those entering the profession. I wish that Newcastle with its unrivalled facilities for the study and teaching of the diseases of occupation could set an example in this direction and institute a department of industrial diseases. Such a step would not only be an indication that the University is alive to its opportunities but would also be for the very material welfare of those who form the vast bulk of the population of the district.

The University of Durham Act, 1908.

Mr. J. Bruce Williamson, barrister-at-law, has been gazetted as secretary to the Commissioners appointed under this Act, of whom the Duke of Northumberland is chairman.

Royal Army Medical Corps.

The *Gazette* of Oct. 30th contains the announcement that

Sir G. H. Philipson is appointed to the honorary colonelcy of the Royal Army Medical Corps of the Northumbrian Territorial Division. I congratulate the venerable professor of medicine of the University of Durham on his acceptance of an appointment in the Territorial Army and hope that his example will stimulate younger men to take their part also in the Territorial organisation.

Eye Department of the Royal Victoria Infirmary.

At the monthly meeting of the governors of the Royal Infirmary held recently Dr. T. Gowans was elected honorary assistant in the eye department. Dr. Gowans already holds the appointments of honorary ophthalmic surgeon to the Ingham Infirmary, South Shields, and to the South Shields Dispensary.

The Coronership of Newcastle.

In my last letter I referred to the fact that the Newcastle Ratepayers' Association had approached the members of the city council individually by letter deprecating the practice of members of a public body becoming candidates for appointments in their own gift. Letters inclosing copies of this circular were also forwarded to the Local Government Board, the Registrar-General, and several Members of Parliament having associations with the North of England. The Local Government Board replied that it had no control over local authorities in the matter of these appointments. There were originally 12 applicants for the coronership but an unusual situation arose the day before the council was to meet to make the appointment when the following letter was received by the council signed by 11 of the applicants withdrawing their applications:—

GENTLEMEN,—In response to the advertisement issued by your council on the 22nd ult., inviting applications for the office of coroner, we, the undersigned, became candidates for the post. We now find, however, that a majority of the council had then already promised to vote in favour of a certain councillor. Under such circumstances we feel that it is quite useless for us to proceed with our candidature and therefore withdraw our applications.

When the council met there was, therefore, but one applicant, who, at the time of the death of the late coroner, was a councillor and vice-chairman of the watch committee. A motion to postpone the election for three months was negatived by 49 votes to 17 and the applicant was appointed by 50 votes to 16.

Day Nursery in Newcastle.

Recently Mrs. Woods, the wife of the High Sheriff of Northumberland, opened a day nursery which has been established in the city through the generosity of the Lord Mayor, Mr. W. J. Sanderson. The nursery is intended as a place where poor women who have to go from home during the day to earn their living may leave their infants while they are at work, with the assurance that they will be properly cared for during their absence. The Newcastle institution is to be affiliated with the National Society of Day Nurseries. Subscriptions and donations are invited towards meeting the cost of maintaining this excellent institution, and in view of the interest now being taken in the preservation and protection of infant life there will, it is hoped, be no difficulty from the financial point of view.

Nov. 17th.

SCOTLAND.

(FROM OUR OWN CORRESPONDENTS.)

Clinical Teaching in Edinburgh.

THE feeling has been steadily gaining strength in Edinburgh that the time has come when radical changes ought to be made in the medical curriculum. This recently found expression in a discussion which was initiated by the Pathological Club and culminated in the appointment of a committee to go into the whole question and to report. That report is being waited for, but meanwhile it is understood that an important question bearing upon clinical teaching has arisen or is shortly to arise. In this connexion it may be mentioned that some time ago the University proposed that all the full surgeons to the Royal Infirmary should become University lecturers on clinical surgery and that for certain privileges offered by the University the lecturers should pay the University a proportion of the fees collected from students. The offer was rejected for various reasons. It is understood that the matter is to be opened again and that probably the University will offer terms that may be more acceptable. Whatever decision the surgeons may come to it is certain that, as has been said, there is a growing feeling that changes must be made and that amongst the most clamant are changes in clinical teaching. At the present time, as in the past, the students may select any one of five teachers in clinical surgery, two of whom are professors and three are extra-mural. The result is that the students are badly distributed and there is no attempt at coördination of teaching amongst the lecturers. Such a want of arrangement may have served well enough in the past but it is not in accordance with what is justly looked for in the training of the medical student of to-day. When this matter was referred to on the previous occasion it was noted that the University had made the proposals, although in all medical matters the tendency on the side of the University is towards conservatism, and that the rejection of the proposals came from members of the extra-mural school. The University might be more successful if it frankly acknowledged that the proposals are made with a view of strengthening the University rather than as a concession or a privilege offered to the extra-mural school. The extra-mural school in Edinburgh has always held its own and taken quite its own share, if not more, of the students and of the teaching. Financially such coördination of the teaching would not benefit the extra-mural lecturers, but were they appealed to on the higher and wider ground financial considerations would almost certainly be given a secondary place.

Women Graduates and the University Franchise.

Much interest was aroused in Edinburgh last week by the report of the proceedings in this case before the House of Lords. Two of the women graduates argued their own case, Miss Jessie Chrystal MacMillan, B.Sc., speaking for three hours in expounding the views held by her and the other appellants. Their lordships evidently treated them with much consideration, allowing them to continue to speak without interruption save by an occasional question or comment. Miss MacMillan's speech contained many points of much historic interest and seems to have been characterised by much lucidity of expression. The Lord Chancellor had to remind Miss Frances Helen Simson who followed Miss MacMillan that they were a judicial body and that what they had to discuss and to consider was the meaning of the Act of Parliament and the real interpretation of the law. Their lordships' judgment is awaited with interest.

The Royal Medical Society of Edinburgh.

At Melbourne-place, Edinburgh, on Nov. 13th, Dr. John Gilmour delivered his presidential address before the society. He chose as his subject the surgery of 100 years ago, describing, in the course of a very interesting address, many methods of treatment then employed for the relief of various surgical conditions. He made special mention of the life and work of William Hey. Dr. Barcroft related a case of posterior basic meningitis which was treated with great success by the use of a specific serum, opportunity being taken of a lumbar puncture to inject the serum through the same needle. Dr. F. E. Reynolds showed two very characteristic cases of congenital specific disease.

Graduation Ceremony at the University of Glasgow.

The autumn graduation ceremony took place last week. The Principal, Sir Donald MacAlister, received an ovation from the students on account of his recently acquired K.C.B. In the faculty of medicine the only graduands were those who had been up for the M.D. examination. Of 13 who received the degree two graduated with honours and five with commendation.

Gartloch Asylum.

In the annual report recently issued of this asylum it is stated that 300 cases were admitted, while 294 were discharged or died during the year. There were in all 1040 persons under care during the year and the average number resident was 752. The character of the admissions during the year was bad from the point of view of probable discharge or recovery. Of those admitted with a history of the duration, 186, or 64 per cent., were ill over a year on admission, were congenital imbeciles, or had been ill previously. There were 15 epileptics admitted, 34 general paralytics, and 52 cases of dementia (secondary, organic, or senile), besides paranoiacs and other cases of chronic

delusional insanity in whom recovery was hopeless. The Gartloch recovery rate of 39·6 per cent. is well above that of the Scottish Royal and District Asylums. As usual, alcohol is reported as appearing to be the factor in more cases than any other cause. Parental drunkenness is also a striking cause.

Death of Mr. John Dougall, M.D. Glasg., F.F.P.S. Glasg.

The death of Dr. John Dougall took place at Glasgow on Nov. 14th. Dr. Dougall studied at the University of Glasgow and graduated M.B., C.M. in 1869 and M.D. two years later. He became a Fellow of the Faculty of Physicians and Surgeons of Glasgow in 1876, and afterwards was appointed lecturer in materia medica in the school of medicine of Glasgow Royal Infirmary, and when that school was transformed into St. Mungo's College he retained the position and occupied it until the time of his death. For many years he was one of the visiting physicians of the Royal Infirmary, an office from which he retired five years ago. Subjects to which he directed special attention were the possibility of manufacturing vaccine apart from animals and the methods of disinfection. He also wrote a number of verses which were published in book form. He was a keen lover of nature, and was a member of both the Geological and Natural History Societies of Glasgow.

Bequests for Paisley Infirmaries.

Under the will of the late Mr. Samuel Young of Paisley local infirmaries have benefited considerably. The Royal Alexandra Infirmary Endowment Fund gets £600 and the building fund £400, the Royal Victoria Eye Infirmary gets £400, and the Paisley and District Association for the Prevention of Consumption and other Forms of Tuberculosis £200.

University of Aberdeen: Appointment to the Chair of Pathology.

As announced in THE LANCET last week the King has been pleased, upon the recommendation of the Secretary for Scotland, to appoint Mr. George Dean, M.B., C.M., chief bacteriologist at the Lister Institute of Preventive Medicine, to the chair of pathology in the University of Aberdeen, vacant by the resignation of Professor D. J. Hamilton. Professor Dean, who is a native of Aberdeenshire, graduated M.A. at the University of Aberdeen in 1885 with honours in natural science, and M.B., C.M., with honours in 1889. After graduation he studied in Berlin under Professor Pfeiffer and Professor Virchow and in Vienna. In 1891 he was appointed assistant to Professor Hamilton in the University of Aberdeen and held this post until in 1897 he was appointed bacteriologist in charge of the serum department of the Lister Institute of Preventive Medicine. In 1906 Dr. Dean was promoted to the post of chief bacteriologist to the Lister Institute. He has acted as examiner in pathology at the University of Aberdeen and examiner in pathology and bacteriology at the Royal College of Veterinary Surgeons. He has published numerous papers dealing with research on diphtheria, tetanus, tuberculosis, plague, typhoid fever, and on various questions connected with immunity. The appointment has given great satisfaction in Aberdeen University circles.

The Treatment of Consumption in Aberdeen.

At the monthly meeting of the Aberdeen city parish council held on Nov. 10th, the adoption of a report by the poor-house committee was moved and seconded, which report recommended that the upper male and female wards at the south end of the general hospital at the poor-house should be set aside for the treatment of curable cases of consumption and for the isolation of more advanced cases; and that it be remitted back to the poor-house committee, with powers to carry out the necessary alterations of the wards at a cost not exceeding £190. An amendment was moved and seconded that "No further action be taken with this matter meantime." 19 voted for the adoption of the report and 9 against. The wards are capable of accommodating 20 male and 20 female patients, and the following alterations will require to be made: (*a*) the Plenum system of heating and ventilation shut off from both wards; (*b*) the heating carried out by steam radiators; (*c*) ventilation obtained by altering the windows to open by quadrants from the upper horizontal sash, with additional inlet ventilators through the walls at the rear of the radiators; and (*d*) the erection of a roof over the balcony at the south end of each ward.

Nov. 17th.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

Government Grants to Dublin Hospitals.

AT a meeting of the South Dublin guardians on Nov. 11th the following motion was proposed by one of the members:—

That in our opinion the time has come when the system of giving the Government grants to our city hospitals should be revised; that in future all our city hospitals should receive a share of the said grant in proportion to the number of poor people relieved and treated by them.

He also appended a suggestion that copies of the resolution should be sent to the Chief Secretary for Ireland, the Lords of the Treasury, and the various members of the Dublin corporation. He then proceeded to point out that the 269 beds of Cork-street Fever Hospital had, on an average, but 148 of these occupied. The number of patients during last year was 1997. There were no dispensary patients. The Government grant towards maintenance was £2500. In Steevens' Hospital there were 230 beds, and the average number occupied was 173. The number of intern patients during last year was 1566, and that of those treated in the dispensary was 13,804. The Government grant to this hospital was £1300. In the Meath Hospital there were 147 beds, and the average number occupied was 106. The intern patients last year amounted to 1446 and the dispensary cases to 16,463. The Government grant was £600. There were 97 beds in the Rotunda Hospital and the average number occupied was 71. The number of patients during last year was 2435; that of the dispensary cases 12,366. The Government contributed £700. In the Royal Hospital for Incurables there were 217 beds and the average number occupied was 207. During the past year the number of patients was 528 and the Government grant was £250. In the Mater Misericordiæ Hospital there were 335 beds and the average number occupied was 310. During the past year there were 3852 intern and 21,240 dispensary patients; while the Government made no contribution whatever to its maintenance. St. Vincent's Hospital had 145 beds and the average number occupied was 96. Last year there were 1847 intern and 20,539 dispensary patients and there was no Government grant. The Holles-street Hospital had 46 beds, of which the occupied average was 36. The intern patients during the past year numbered 828 and the dispensary cases 4285. Again no Government grant. The Hospice for the Dying had 110 beds, of which the average number occupied was 96. There was no Government grant. The case was surely one for re-adjustment. The motion was duly seconded and carried. All readers must agree that in a democratic age the influences of social ascendancy, religious bigotry, racial antipathy, and political jobbery should not be allowed to hamper facilities in the treatment of the sick and suffering, which are always cheerfully afforded by a sympathetic and charitable public. That they have done so in Ireland cannot be denied; it is also obvious that they cannot long continue to do so.

Anti-Tuberculosis Crusade: the Progress of the "Lecture Van."

A "tuberculosis caravan," which has been provided by the committee of the Women's National Health Association of Ireland, is visiting various parts of the country, and lectures will be delivered on the best method of combating consumption by the accompanying medical man. The opening ceremony took place at Kilcool, county Wicklow, in the presence of a large gathering of the inhabitants. From Kilcool it moved to the more important centre of Newtownmountkennedy. Lady Aberdeen paid a formal visit to this station on Nov. 10th and was received in the school-house by a representative gathering of local gentry and others. The chair was occupied by the Rev. Canon Drought. Miss Tottenham, president of the local subcommittee of the Women's National Health Association, was present, with a large number of the members. Loud and hearty greetings followed Her Excellency's entrance into the school-room and the chairman expressed the general appreciation of her exertions "in pursuance of her great crusade against the terrible ravages of tuberculosis." Father Duggan pointed out that "the work that had been done was already bearing fruit in the district because he saw in Kilcool the day before that many of the windows of the houses were open"—a statement which

elicited prolonged laughter and applause. The speaker further expressed the want of better housing accommodation for the poor in the locality, and pointed out that the want of a district nurse was very badly felt. Lady Aberdeen delivered an interesting address on the aims and objects of the crusade, and stated that they were starting the van in that district as a sort of test before sending it to the West of Ireland for which it was intended.

Mater Misericordiæ Hospital.

On Nov. 5th the Annual Office and High Mass for the deceased benefactors of the Mater Misericordiæ Hospital were offered in the Pro-Cathedral, Marlborough-street. There was a very large attendance of clergy as well as a crowded lay congregation. The *clientèle* of the institution is necessarily a vast one, as it is by far the largest of the charitable institutions in this country for the professional relief of the sick and suffering poor. No question has ever been raised regarding the efficiency of the nursing attendance; the Sisters of Mercy are always on duty within its walls and had already introduced their own system (there and in St. Vincent's Hospital) years before the epoch-marking revolution of the training and employment of lady nurses in our other institutions—in fact, at a period when a goodly proportion of our hospital, to say nothing of private, nursing was carried out in the true and original "Sairey Gamp" style. The daily average number of occupied beds in the Mater Misericordiæ Hospital is over 300; its annual attendance of intern patients is over 4000 and of extern attendances over 26,000. The devotion and skill of the nursing Sisters of Mercy have become a household word throughout the country and are fully recognised and appreciated by members of all the creeds and parties who are so prone to contradict one another's views on nearly all other public questions. And a specially significant fact in the history of this largest (and in many ways most representative) of our Irish hospitals is that it has never received any endowment and relies for its existence solely on the charitable devotion of a sympathetic people. And the requisite aid has never failed to be forthcoming.

The Dispensary Medical Officer not a Workman!

A very important decision, the first of its kind, has just been given in the Court of Appeal in regard to the validity of claim for injury made by a medical man (or his heirs, or executors, or representatives) under the Workmen's Compensation Act. Readers will remember that the widow of the late Mr. Denis Murphy, L.R.C.S.Irel., was awarded by the county court judge of Wexford a sum of £300 as compensation for the death of her husband which was due to the accidental collision of his dog-cart with a motor-car while he was engaged in the discharge of his duties as a dispensary medical officer. When the case was brought to the Court of Appeal by the guardians, who had been sued as his employers, the judges decided unanimously that the claim could not be upheld, inasmuch as the dispensary medical officer is *not* a working man. The decision, it need hardly be said, has produced a deep feeling of disappointment among the medical officers of the Poor-law service. The hope has been expressed that the Irish Medical Association, which had encouraged and supported the widow in the endeavour to uphold her claim, will be able to continue its advice and assistance till the case is brought before the House of Lords.

The Belfast Natural History and Philosophical Society.

On Nov. 10th, in the Belfast Museum, before a very large audience, Sir Otto Jaffe, LL.D., the retiring President, introduced in complimentary terms the incoming President, Sir John W. Byers, who, having first returned sincere thanks to the council of the Belfast Natural History and Philosophical Society, which for a period of 87 years had kept the lamp of learning burning in Belfast and had encouraged original research in various directions, delivered the inaugural address on the Folk-lore of the Ulster Child. Sir John Byers first described many curious customs associated with the birth of children, the supposed influence of the fairies, and matters considered lucky, or the reverse, in reference to infants. He then dealt very fully with the words and phrases applied in Ulster to children, relating many interesting customs, sayings, and old poems.

The Ulster Medical Society.

On Nov. 3rd Dr. T. S. Kirk, the new President, opened the present winter session by giving an address on Spinal Caries, dealing fully with its causation, diagnosis, and treatment. At the conclusion of the lecture he was awarded a warm vote of thanks.

The Belfast Hospital for Sick Children.

A sum of over £1000 has been paid to the treasurer of the Belfast Hospital for Sick Children to endow a bed in memory of the late Dr. S. Brice Smyth, the money having been contributed by his friends and patients.

Belfast Medical Students' Association.

At the inaugural meeting of this association, held in the Students' Union of Queen's College, Belfast, on Nov. 16th, Dr. Stewart, the incoming President, having delivered an address on Bygone Medical Superstitions, a lecture was given by Dr. E. F. Bashford, director of the Imperial Cancer Research laboratories, on the Experimental Investigation of Cancer. The practical result of these experiments so far was that they might be able at some future time to prevent the dissemination of the disease. On the motion of Professor W. St. C. Symmers, seconded by Mr. W. D. Thompson, B.A., a cordial vote of thanks was accorded to the lecturer.

Nov. 17th.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

Meeting of the International Sanitary Bureau.

THE International Sanitary Bureau met on Nov. 4th at the Foreign Office under the presidency of M. Barrère, French Ambassador to Italy. M. Pichon, Minister for Foreign Affairs, opened the proceedings in a speech in which he said that France was much flattered at having been chosen to be the country in which the meeting took place. The Italian delegate then replied in the name of his colleagues from the other Powers. After M. Pichon had left, M. Barrère rose to propose the selection of a president of the permanent committee of the Bureau. Despite the pressure which had been put upon him to accept the post himself he proposed the appointment of the Italian delegate, M. Santoliquido. This nomination was carried unanimously. The International Bureau owes its inception to a decision of the International Sanitary Conference held in Paris in 1903 and came into being a few months ago at an International Conference held at Rome. Here it was decided that the permanent seat of the Bureau should be at Paris.

The Open Sea Cure.

At a meeting of the Therapeutical Society held on Oct. 28th M. Laumonier showed that the therapeutic effect of sea air on the coast is quite different from that of the open sea—i.e., 20 or 30 miles out. On the coast the effect tends towards excitement and congestion and moreover is irregular in its action. Out at sea it is tonic and regulating (*équilibrante*) and in addition the patient gets quiet, a regular life, and a continuous bath of pure air. These advantages are not so patent on board great liners on account of the vibration and the smell from the engines, but on a sailing ship they are evident. M. Laumonier cited the case of an overgrown youth, aged 17 years, who was very neurasthenic. After a voyage in a sailing ship lasting 14 months he was quite well. He also stated that he knew a tuberculous patient, aged 36 years, who was obliged to cross twice a year from Europe to South America and whose health was always much better during the voyage. M. Laumonier concluded by pleading for the establishment of a "cure ship." She should be a sailing ship capable of making lengthy and slow cruises.

Fracture of the Neck of the Femur in the Aged.

Many surgeons have given up trying to get union in the case of an aged patient with a fracture of the neck of the femur, for such patients if kept lying down in bed are very liable to troublesome bedsores and to hypostatic pulmonary congestion, from which they generally die. Dr. Delbet has found a solution of this difficult problem and on Nov. 3rd he showed four patients at the Academy of Medicine whom he had treated with great success for fracture of the neck of the femur by a special method. Of the four patients one was 80 years of age, two others were between 60 and 70 years, and one was only 40 years. They could all walk and go up

and down stairs with ease and comfort. Dr. Delbet's method is as follows. Thanks to certain bearings which are carefully laid down by means of a special apparatus which he described, he can with certainty pass a pin or a screw through the neck of the femur into the head. The pins are well tolerated. General anæsthesia is unnecessary; a deep injection of stovaine is introduced into the field of fracture and a superficial one is given in the line of the incision.

Trouble at the Faculty of Medicine.

I have written from time to time in THE LANCET of the troubles which occurred last year at the Faculty of Medicine in connexion with the opening lectures of the new professors, Dr. Nicolas and Dr. Prenant. As a consequence of these disturbances the Faculty was shut for some weeks. At the beginning of November, when Dr. Nicolas began his present course of lectures, the students of the first and second years began their disturbances again. This time, however, they alleged different reasons. They no longer laid stress on the fact that Dr. Nicolas was provincial, but they argued: (1) That students could no longer go to Clamart to dissect; (2) that they got no good out of their work, for the authorities put seven men on to one body; and (3) that the post of chief demonstrator, which had been held by M. Rieffel, had been done away with at, they alleged, the instance of Dr. Nicolas. M. Landouzy, the dean of the Faculty, said in an interview that the reasons given were merely pretexts. The real reason why students were no longer allowed to go to Clamart is on account of the alteration in the law as to military service, which has led to there being far less overcrowding of students of medicine. Formerly every young man had to put in three years of military service except he were a student in law or medicine, when he only did one year. Now, however, the term of service is reduced to two years and there are no exceptions for students—a fact which has considerably diminished the crush. Clamart was simply struck off the list owing to the diminution in the number of students. As to seven students being set to dissect on each body, M. Landouzy said that in his time seven students were able to do excellent work on one body. As to the suppression of M. Rieffel's post, that was the act of the Council of the Faculty and had nothing to do with Dr. Nicolas. Finally, M. Landouzy said that if the disturbances went on he should not again close the Faculty, for that pressed hardly on students who were anxious to work, but he should simply prosecute in the ordinary courts anybody who had burnt or broken up any of the fittings of the school.

Assistance to Pregnant and Puerperal Women.

M. Paul Strauss has introduced into the Senate a Bill providing that no woman shall work for one month after her confinement. Compensation will be given to any woman duly recognised by law as being in this condition. M. Caillaux, the Minister of Finance, however, laid before the House some figures showing what would be the effect of the passage of this measure on the State and municipal budgets. The number of women who would profit under the law would be about 112,268. Supposing that the sum allowed were 1 franc per person per day the total sum would be 6,272,000 francs. At 1.50 francs the total expenses would be 9,408,000 francs. In the first case the contribution of the State would be 1,085,000 francs and in the second case 1,627,000 francs. The departmental and communal contributions would be much heavier—namely, in the first case 3,393,000 francs and in the second 5,089,000 francs. The Minister of Finance added that these figures required thinking over and, moreover, they only took into consideration the workers in towns. An amendment was put forward to include in the Bill every woman doing any remunerative work as soon as she arrives at the last period of her pregnancy. M. Caillaux refused to accept this amendment, which he said would entail an extra charge of 20 or 25 million francs on the Exchequer. The House then went on to consider a clause dealing with puerperal women, the object of the clause being to secure that every pregnant or puerperal woman for one month before, or one month after, her confinement should not be liable to have her contract of service broken on account of her condition. The Senate, however, agreed to the following altered form of the clause: "That no employer should break a woman's contract of service simply because she did not work during the month before or the month after her confinement."

Nov. 17th.

SWITZERLAND.

(FROM OUR OWN CORRESPONDENT.)

Operative Treatment in a case of Circumscribed Serous Meningitis.

IN the *Korrespondenzblatt für Schweizer Aerzte* of Nov. 1st Dr. C. de Montet publishes a remarkable case of paralysis where the symptoms were alleviated by surgical interference. He first referred to similar cases reported by Krause, Bruns, Sänger, V. Horsley, and especially Oppenheim, in a recent treatise on the diagnosis and treatment of tumours, and then went on to describe his case. The patient, an unmarried woman, aged 53 years, fell ill in December, 1907, with acute pain in the upper spinal region radiating into the pectoral regions. Pain and weakness followed and at last, in January, 1908, severe paresis of the legs ensued. The patient then entered the Thurgovian Cantonal Hospital at Münsterlingen. By Feb. 10th the condition was worse. The interscapular pains, though intermittent, were more intense and reached all round the thorax. The sphincter muscles of the bladder and rectum were paralysed. The pulse stood at 88 and the temperature varied from 98·5° to 100° F. There was almost complete paralysis of both legs. The reflexes were increased. Sensitiveness was decreased downward in an almost horizontal line at the level of the xiphoid process. The fourth and fifth vertebral spines were very sensitive to pressure. Puncture of the lumbar sac did not indicate any increase of lymphatic pressure. There were slight lymphocytosis and leucocytosis; the bacteriological examination was negative, and the antecedent history was uneventful. The diagnosis was difficult, but as the symptoms rapidly increased in severity and cystitis set in, Dr. Brunner, the house surgeon, performed an explorative laminectomy. This was on Feb. 25th. A great quantity of liquor cerebrospinalis escaped, evidently under high pressure, and the diagnosis of localised serous meningitis was made. The recovery was fairly rapid and complete. The patient left the hospital on March 30th. She was visited on May 18th and had resumed all her former occupations.

Sunshine and Longevity.

The official inquiry office of Magliaso in the canton of Tessin has published some interesting statistics relating to meteorological observations and their connexion with longevity. The meteorological observations all refer to the year 1906 and to several hundred villages and towns, and speak very favourably of the weather conditions in many places in very sheltered positions varying in altitude from 200 to 800 metres above sea level (700 to 2500 feet). In most of these simple but sufficient accommodation in small hotels and pensions has increased and multiplied. The observations show a maximum of at least 300 days with sunshine in many localities, Carabietta and Pentilino, near Lugano, heading the list with 327 and 331 sunny days respectively. Locarno and Lugano are also famous for their supply of sunshine but little need be said as these are well-known winter health resorts affording the best of accommodation for travellers in search of a mild and equable winter climate, but in March and April these places are liable to be overcrowded. How far the extraordinary amount of sunshine goes to promote longevity it is difficult to say, but the percentage of old people is exceptionally high in the canton of Tessin. The number of old people over 70 years of age in a population numbering 149,384 persons amounted to 6422, or 44 per 1000, 10 per 1000 being octogenarians. The corresponding numbers for the United Kingdom are, I believe, 27 per 1000 in England and Wales, 29 per 1000 in Scotland, and 42 per 1000 in Ireland. It must be mentioned that a goodly number of inhabitants of the canton of Tessin emigrate and return after several decades to spend the rest of their lives in their simple country homes.

Zürich, Nov. 16th.

BUDAPEST.

(FROM OUR OWN CORRESPONDENT.)

A New Clinic for Psychiatry at Budapest.

THE new clinic of the Budapest Royal University for the study of psychiatry was recently declared open by Count

Albert Apponyi, Minister of Public Instruction. The building is a good blend of hygienic and architectural features. It can accommodate altogether 160 insane patients. In a middle pavilion are the administrative offices and behind these are the laboratories and lecture halls. The patients, male and female, are accommodated in separate pavilions according as they are quiet or inclined to be violent, while a separate building is reserved for those suffering from infective diseases. The director of the new clinic, who has been appointed by the King, is Professor Ernö Moravesik, formerly professor of forensic psychiatry in the University. The admission of patients will begin with the new year.

The Position of Practice in Budapest.

Only a few weeks ago the Berlin practitioners complained of the excessive growth of the number of specialists in their city. To-day the Budapest practitioners also have to make the same moan. Every single branch of the medical science and art has representatives, many of whom are unable to earn their livelihood but still are able to spoil the practice of the general practitioners. An increase of polyclinics and other free institutions for medical attendance has followed and is also inimical to general practice. There is in Budapest a sick club with 120,000 members who have a right to free medical treatment. The State medical institutes keep up outdoor departments, where everybody can get medical advice without any regard to his financial circumstances, for the simple reason that in this way better statistics of work can be shown. The managers of these institutions like the great display of activity, though the quality of the work done is not what is shown but only the quantity. In order to alter somehow these conditions the general practitioners of Budapest propose to make an organised attempt to influence the leaders of the University so that the latter may insure free medical attention being given only to actual paupers. The specialist question will also be dealt with, it being sought that nobody shall be allowed to call himself a specialist unless he has spent five years in special study at a corresponding clinic. Such a radical enactment would much improve the material condition of the practitioners.

The New (Third) Medical Clinic.

In some five or six years the numbers of medical students in Budapest have trebled. While in the year 1900 the number of first year students amounted to 150, this year the number is 450. This great increase of students has necessitated the extension of the University Clinic. New hospitals have been built in quick succession, but still there were such crowds in the lecture halls that in the interest of those seeking instruction it became necessary to build extensively. The head of the clinic has already been appointed by the King of Hungary in the person of Professor Ernst Jendrassik who has gained his reputation as a neurologist, and his father, it may be recollected, was professor of physiology at the University of Budapest.

Nov. 14th.

NOTES FROM INDIA.

(FROM OUR OWN CORRESPONDENTS.)

Sanitary Conference in United Provinces: General Conclusions.

THE following is a *précis* of the general conclusions of the United Provinces Sanitary Conference held at Naini Tal by order of the Lieutenant-Governor.

The conference considered at length the possibility of decreasing malaria, and notes on the subject by Colonel Murray, I.M.S., and Major J. Chaytor White, I.M.S., were considered. A special officer has been appointed to inquire into the prevalence of malaria in the United Provinces and his report will no doubt show what works should be undertaken in specially malarial tracts. Meanwhile, as a practical measure the conference recommends that a map of each district showing by the mortality returns the most malarial tracts should be prepared in the office of the Sanitary Commissioner. On the basis of this map district boards can carry out a detailed sanitary investigation into the condition of these tracts and systematic measures can then be taken for drainage, filling up insanitary pits and hollows, removal of noxious vegetation, and distribution of quinine. The conference has already proposed amendments to the Village Sanitation Act enabling the local authorities to prevent new excavations within or in the neighbourhood of inhabited sites and to fill up old excavations. It also suggests that the filling up or draining of existing railway burrow pits near inhabited sites is a question needing the consideration of Government, and that both railways and the Public Works Department should be prohibited from making such pits near inhabited sites in future. The distribution of quinine should be very considerably extended. The conference is informed that in an inquiry made in the Dinajpur district (in Bengal) three-fourths of the deaths from acute malaria were found to occur in children under ten years of age, and mostly in the autumn months. It therefore suggests that district boards should distribute quinine through village schoolmasters who are in a position to know when a child is absent from fever. Not only do children constitute the majority of victims, but it is in the blood of untreated children that the parasites thrive best and are conveyed by mosquitoes to adult persons. For the treatment of children some more palatable method of administering the drug than the bitter sulphate of quinine powders is essential. Distribution in the tabloid form has proved successful in the Duars tea gardens and might be tried in these provinces. The dose should not be less than ten grains; and although the sale of this amount at one pice (a farthing) involves a loss the expenditure would be well incurred. Another most important point which the conference wishes to emphasise is the extension of masonry surface drainage in towns large and small. The most dangerous varieties of anopheles breed in the earth-lined and grass grown roadside drains and are much more rarely found in tanks and small puddles. A most potent cause of malaria is thus situated at the doors of the inhabitants of the majority of Indian towns. Municipal boards should organise mosquito brigades to apply crude kerosine to collections of water in which the insects breed. The example of the Mizapur district board which is placing fish in large permanent tanks might be followed. A general thinning of trees and shrubs on scientific lines in some of the towns of this province is also essential and power should be given to municipal authorities to deal with trees and shrubs in private enclosures on the lines of Section 99 of the Cantonment Code, 1899, care being taken to obtain expert advice in the case of any general felling of trees. The question of restricting irrigation in the neighbourhood of towns and villages is of great importance. In a resolution passed in January, 1855, to give effect to the Canal Act of that day, the following limits were laid down:—

From military stations	5 miles.
From towns with over 10,000 population	1 mile.
,, ,, 5,000 ,, ...	½ ,,
From large villages with over 1,000 population... ...	¼ ,,
From villages with less than 1000 population	200 yards.

These provisions have not been enforced and would cause considerable hardship and loss of revenue if now insisted on. Canal irrigation has been restricted in the neighbourhood of towns in various instances—e.g., Barant, Shamli, Kosi, and Jansath. The conference accepts the general principle that where it is possible with due regard to agricultural interests it is desirable to exclude canal irrigation from certain areas round towns and villages. What this area should in each case be should be fixed by the sanitary authorities and the enforcement or non-enforcement of the exclusion should be carried out by the revenue authorities in consultation with the sanitation department. Rule 7 of the rules made under the Canal Act, 1873, should be communicated to municipal boards in canal districts and incorporated in the *Municipal Manual*. This rule provides that the divisional canal officer may, with the previous approval of the Commissioner, prohibit the use of canal water for the irrigation of any *kharif* crop, when the land to be irrigated is situated within one mile of the uttermost houses of any town if such irrigation be objected to by the municipal committee. A note furnished by Mr. Streatfield shows that practically the entire programme for drainage works in canal districts in connexion with canals has been completed, with the exception of a few works on the Eastern Jumna Canal. The conference suggests that the irrigation department should take up the question of drainage in other than canal districts, the staff if necessary being strengthened for the purpose. The special officer deputed to inquire

into the subject of malaria should be directed to investigate the question of drainage also. His inquiries should show what further drainage lines are desirable. The conference suggest no modifications in the methods adopted against plague which are the outcome of the years of experiment and experience. The result of the experiments now being made at Gorakhpur to render houses rat-proof should be awaited. The use of wire netting in the floors and walls of houses should prevent incursions by rats. A circular should also be issued recommending local authorities to encourage the keeping of cats. The question of the possibility of directly diminishing infant mortality has been considered. A note on the subject prepared by Major White, I.M.S., officiating sanitary commissioner, United Provinces, shows that the chief causes of the high mortality of infants in India are the immaturity and ignorance of mothers, improper feeding, and the exposure of infants to all the influences of an insanitary environment. Other causes are the want of skilled midwives, neglect of treatment of infantile diseases, disregard of primary rules of sanitation in the lying-in rooms, low nutritive value of food for mothers, poor clothing, and poor houses. An analysis of a table of infantile deaths submitted to the Calcutta municipality shows that convulsions, tentanus, and bronchitis carry off the largest proportion of infants. Tetanus is probably caused by the custom of rubbing dry earth or earth mixed with cow dung into the navel and careless exposure explains the large incidence of pulmonary diseases. The conference suggests that a certain number of women of the professional midwife classes should be trained for the purpose of serving as peripatetic *dais* under district boards. It considers that cheap maternity hospitals should be erected in the large towns, separate and distinct from the Dufferin hospitals. Such institutions would be under the charge of trained *dais* and be intended for the use of the poorer classes. The conference has before suggested that at least one model dairy should be established in each large town and has proposed additions to the Municipal Act giving boards greater control over cattle sheds and cow houses. It recommends that with a view to ascertaining more definitely the causes of infant mortality in these provinces a special inquiry should be conducted during one year in a typical town, preferably Cawnpore. The conference considers that in view of the popularity of Almora as a health resort by consumptives and the desirability of not only affording facilities for treatment to such persons, but also protecting Almora itself against infection, a hospital should be constructed outside the town to be used mainly by paying patients. Finally, the conference recognising that the main hope for improvement in the future lies in the education of the rising generation, recommends that sanitation and hygiene of an elementary character should be taught in all boys' and girls' schools up to the eighth class, and that the course should be compulsory up to that class and optional afterwards. Simple sanitary rules should be issued free or at a nominal price by district boards.

Punjabi Women and Vaccination.

To overcome the opposition of the women is one of the problems confronting the vaccination department of the Punjab. In many places, we are told, women still regard a visit to Mata Devi as a far more efficacious protection against small-pox than vaccination. During the last three years the number of primary vaccinations performed show a persistent annual decline, though the total for the three years is greater than the total for the previous triennium. The Lieutenant-Governor accepts plague and the consequent reductions in births as the explanation of this, though the fluctuations in the figures of particular districts are probably affected chiefly by the popularity and energy or the absence of these qualifications in the vaccinators. The fraction of the population which submits to revaccination is minute. The personal equation appears to enter largely into the calculations of the success of the operations, for while one Deputy Sanitary Commissioner found 61 per cent. of successes in revaccinations, the other found 99 per cent.; and similarly in the same districts the different inspecting officers record very different proportions of success. It can hardly be that the facts which came under the notice of the different officers differed so greatly as the statistics would imply, and it would seem that a more accurate definition of what is a successful revaccination is required. The Lieutenant-Governor is inclined to doubt whether the present very elaborate system of inspection of vaccinated persons by a supervising establishment is to be commended. The purpose of inspection is to see that the vaccinators do their work properly, and surely it is not necessary in order to secure this that babies should be hailed twice or possibly three times before an inspecting officer. It is probable that the trouble of these inspections and the long waits of the mothers with their children, even if there are no tiring tramps for them, do more to deter the women from producing their children for vaccination than the nuisance of the vaccination itself. The propriety of reducing the inspecting staff will be considered. The Vaccine Institute has worked well and the cost of vaccine is now 10 annas per gramme. The most important event in the history of the triennium has been the transfer at the beginning of this year of the vaccinating staff from the sanitary commissioner to the local bodies by which the staff is paid, a step which it is hoped will help to popularise vaccination.

Oct. 22nd.

Obituary.

PETER WILLIAMS, M.R.C.S. ENG., L.M., L.S.A.

THERE passed away at Ferryside on Oct. 29th, in the person of Mr. Peter Williams, aged 77 years, a member of a medical family who have practised in Carmarthenshire for nearly a hundred years. The son of Mr. E. Williams, surgeon, of Carmarthen, he was a pupil of his brother Dr. John Williams of the same town, who also had as a pupil Dr. Frederick T. Roberts. Entering St. Bartholomew's Hospital he became fully qualified in 1856. At first he joined his brother at Carmarthen, but in 1860 he started in practice at the seaside resort of Ferryside, Carmarthenshire. Here he worked for nearly 50 years and never was a medical man more beloved; rich and poor alike appreciated his services. His manner was so sympathetic and he took such infinite pains with his patients that he soon acquired a reputation which reached far beyond the bounds of Ferryside. About three years ago he practically retired in favour of his son, and was presented on the occasion with a cheque for £300 and a handsome piece of plate, this being the second testimonial which he received during his medical career. In April last he showed signs of serious organic heart trouble, and was then so ill that his life was despaired of, but he recovered to a certain extent; however, this was the beginning of the end, for on Oct. 29th he had another serious attack which ended fatally notwithstanding all the efforts of his son. His funeral was a public one and the whole neighbourhood was represented. There were representatives from public bodies at Carmarthen, Kidwelly, and Ferryside, also from the villages far and near. The body was carried to the old church of St. Ishmael's and was followed by a large concourse of people. Never has there been a more impressive funeral service in that church. It was by the wish of his widow entirely in Welsh. The church was full to overflowing and the evidences of grief were so profound that they testified to the great love which the people had for him. The chief mourners were Dr. Lewis Williams, Mr. Lloyd Williams, Mr. E. Williams, and Mr. H. Williams, sons; Dr. A. Glover Williams, nephew; the Rev. D. Morris, rector of Penally; the Rev. J. Rees, rector of Letterston; Lady Greaves; and the Rev. E. Rowlands. Amongst those attending the funeral was Sir John Williams, Bart., M.D., a personal friend of the deceased, who showed him many acts of kindness during his illness.

EDWARD WHISHAW HENLEY, L.R.C.P. LOND., M.R.C.S. ENG.,

MEDICAL SUPERINTENDENT OF THE GLOUCESTER COUNTY ASYLUMS.

Mr. E. W. Henley died in Gloucester on Nov. 14th, after an operation for appendicitis. He received his medical education at St. George's Hospital and qualified M.R.C.S. Eng. and L.R.C.P. Lond. in 1875 and 1876 respectively.

After holding resident appointments at St. Luke's Hospital, London, the Belgrave Hospital for Children, London, and the Whitehaven and West Cumberland Infirmary, Mr. Henley was in 1882 appointed as assistant medical officer at the Gloucestershire County Asylum at Wotton. He remained at Wotton for two years and was then transferred to the new asylum at Covey Hill. In October, 1906, he was appointed medical superintendent of the Gloucestershire County Asylums, succeeding the late Mr. F. H. Craddock. Mr. Henley was extremely popular in Gloucester and the district; he was a most efficient medical superintendent of the county asylums and much regret is felt at his early death.

THE MEDICAL INSPECTION OF CHILDREN IN LONDON.

THE London County Council this week has approved of a tentative scheme for the inspection of school children in London as required by Section 13 of the Education (Administrative Provisions) Act. The routine of inspection is to be undertaken by means of a temporary staff who will give a part of their time—averaging three half-days a week—to the work, and it has been attempted so to arrange the scheme that any practitioner who feels drawn to this branch of practice will have a reasonable chance of obtaining the knowledge and experience to be derived from school work. Medical inspection without medical treatment of any kind is the only work to be undertaken by this staff.

The scheme provides for the division of the metropolis into 16 districts which generally coincide with the school attendance areas, though these in some instances are subdivided. Each of these districts will be allotted to a school medical officer, the present assistant medical officers of health holding the posts for the present. There will be assistant school medical officers appointed in each district, and these posts are now being advertised. At the end of three years it is designed that the whole staff will number 16 school medical officers with 56 assistants, and all who enter the service will do so in the first instance as assistants with annual appointments. This means that after the election to the posts now advertised there will be an annual election of 24 assistants to commence work on Sept. 1st of each year, the salary, including travelling expenses, being £120 per annum. General practitioners in the various localities will be eligible for the appointment, but it is expected that a certain number of men not in general practice will always be appointed.

School medical officers are to be appointed from among the assistants after at least one year's service at a salary, including travelling expenses, of £150. A rota will be established in the following manner. None of the officers doing this routine work will be eligible for reappointment after the third year from entering the service. Most men will therefore retire after three years' service as assistants, and eight in each year after three years' service partly as school medical officer and partly, for a year at least, as assistant. The school medical officers are to be given considerable responsibility for the routine work in their districts and may also in accordance with instructions carry out special inquiries or investigations in the course of that work. Other inquiries and special examinations or urgent matters will continue to be dealt with as hitherto by the chief education medical officer and the assistant medical officers of the permanent staff.

The scheme is a large one and whether it be acceptable to the medical profession on all grounds or no, it must receive the credit due to thoroughness. The conditions of service being elastic, all members of the medical profession are eligible and under the rota system the benefits of experience are open to the maximum number of the profession. Future appointments can be created without dislocation of existing arrangements by simply increasing the number of assistants to be elected annually. It seems probable that promotions from among the assistants will not generally be made in favour of the general practitioner, the choice of the school medical officers from among those not in general practice being defended on the ground of avoiding invidiousness in elections; but this, the remuneration of the assistants, and several other points will require future consideration.

Medical News.

ROYAL COLLEGES OF PHYSICIANS OF LONDON AND SURGEONS OF ENGLAND.—At a meeting of Comitia of the Royal College of Physicians on Oct. 29th, and at an ordinary meeting of the Council of the Royal College of Surgeons of England on Nov. 12th, diplomas of L.R.C.P. and M.R.C.S. were respectively conferred by both Colleges on the following gentlemen who have passed the Final Examination in Medicine, Surgery, and Midwifery of the Conjoint Examining Board:—

James Wilmot Adams, B.A. Cantab., Cambridge University and St. Bartholomew's Hospital; Frank Robert Lowth Atkins, Guy's Hospital; Martyn Wilfred Baker, B.A. Cantab., Cambridge University and St. Thomas's Hospital; Malcolm Edward Ball, Guy's Hospital; Henry Lewis Barker, St. Mary's Hospital; Ernest Urquhart Bartholomew, L.M.S.S.A., Charing Cross Hospital; Charles Botterill Baxter, M.B., Ch.B. Edin., Edinburgh University and London Hospital; Arthur Cecil Barker Biggs, University College Hospital; Charles Newton Binney, B.A. Oxon., Oxford University and St. Bartholomew's Hospital; Clement Henry Burton Bradley, M.B., Ch.M. Sydney, Sydney University; Lancelot Stephen Topham Burrell, M.A. Cantab., Cambridge University and St. Thomas's Hospital; *John Joseph Cameron, M.D. Toronto, Toronto University and London Hospital; Arthur Laurence Candler, St. Bartholomew's Hospital; Alfred Edward Arthur Carver, B.A. Cantab., Cambridge University and St. Bartholomew's Hospital; Bernard Arthur Cheadle, St. Thomas's Hospital; Bertie Isaac Cohen, St. George's Hospital; John Hutchinson Crofton, B.A. Cantab., Cambridge University and St. Thomas's Hospital; Arthur Henry Crook, B.A. Cantab., Cambridge University and Guy's Hospital; Charles Reginald Cumming, M.B. Toronto, Toronto University and University College Hospital; Richard Julius Cyriax, Edinburgh University, University College, and St. Mary's Hospitals; Sydney John Darke. Guy's Hospital; Harry Cecil Rutherford Darling, University College Hospital; Ernest Edgar Davies, University College, Bristol; Frederick Charles Davies, B.A. Cantab., Cambridge University and Charing Cross Hospital; Samuel Dixon, M.A. Cantab., Cambridge University and St. Bartholomew's Hospital; Maurice Rowland Dobson, Leeds University and Guy's Hospital; Harry Rumsey Edwards, King's College Hospital; Frederick Holcombe Fuller, L.D.S. Eng., Guy's Hospital; Boleslaw Gerzabek, M.D. Cracow, Cracow University; Eugene de Montevin Gideon, M.B. Toronto, Toronto University and London Hospital; Vinayak Balvant Gokhale, L.M. & S. Bombay, Bombay University, King's College, and University College Hospitals; Gilbert Clement Gray, St. Bartholomew's Hospital; Horatio Norman Greaves, Rush Medical College, Chicago, and Guy's Hospital; John William Grice, Cambridge University and Guy's Hospital; Arthur Henry Habgood, B.A. Cantab., Cambridge University and London Hospital; Rowland Hirst Hadfield, Victoria University, Manchester; Rupert Lawrence Haines, St. Bartholomew's Hospital; Philip Thomas Harper, St. Thomas's Hospital; Samuel Richard Harrison, London Hospital; Roland Augustus Hobbs, St. Mary's Hospital; Ernest Charles Holton, St. Mary's Hospital; Henry Hudson, Victoria University, Manchester; Arthur Edmund Ironside, L.D.S. Eng., Charing Cross Hospital; Maurice Lionel Corrie Irvine, St. Thomas's Hospital; Harold Garnett Janion, University College Hospital; Walter Burford Johnson, St. Thomas's Hospital; †David Egryn Jones, M.R.C.S., Melbourne and Toronto Universities and St. Bartholomew's Hospital; Thomas Burnell Jones, St. Bartholomew's and Middlesex Hospitals; Leslie Reginald King, B.A. Cantab., Cambridge University and London Hospital; *Charles Ogilvie Lillie, M.B., Ch.B. New Zealand, New Zealand University and Middlesex Hospital; Edwin Algernon Lindsay, McGill University and University College Hospital; Herbert Cubitt Lucey, Guy's Hospital; Charles Eric Wells McDonald, King's College Hospital; Elias Leopold Woolf Mandel, Guy's Hospital; Guy Harvey Mead, St. Thomas's Hospital; Frederick Valentine Milburn, London Hospital; George Henry Chavasse Mold, Birmingham University; Reginald Mark Moore, B.A. Cantab., Cambridge University and London Hospital; Reginald Arthur Morrell, St. Thomas's Hospital; Malcolmson Knox Nelson, Queen's College, Belfast, and Guy's Hospital; Framrose Ratanshaw Parakh, M.B., B.S. Manch., Bombay and Manchester Universities; Harold Parsons, B.A. Cantab., Cambridge University and London Hospital; Herbert Edward Perkins, Guy's Hospital; William Guy Pinching, B.A. Oxon., Oxford University and Guy's Hospital; Arthur Hardwicke Platt, B.A. Cantab., Cambridge University and Westminster Hospital; Philip Seymour Price, Guy's Hospital; Charles Edward Redman, M.A. Cantab., Cambridge University and St. Mary's Hospital; Douglas Reynolds, Guy's Hospital; Lewis Leslie Clayton Reynolds, Guy's Hospital; Raymond Paul Middleton Roberts, Cambridge University and Guy's Hospital; Francis Harry Robinson, B.A. Cantab., Cambridge University and London Hospital; Allison Montague Rolls, M.B. Toronto, Toronto University and London Hospital; Karl Rupp, M.D. Graz, University of Graz; Edmund Neptune Russell, Cambridge University and St. Bartholomew's Hospital; Alfred Henry Valentine St. John, Guy's Hospital; Arthur Bodley Scott, St. Bartholomew's Hospital; Reuben Shacksnovis, Leeds University; Edmund Ralph Sircom, University College, Bristol; Edward Philip Stibbe, Charing Cross Hospital; Stuart Seguin Strahan, B.A. Oxon., Oxford University and St. Bartholomew's Hospital; George Stewart Strathy, M.D., C.M. Toronto, Toronto University and London Hospital; Edward Leonard Taylor, St. Bartholomew's Hospital; Walter Taylor, M.B. Toronto, Toronto University and University College Hospital; Harold Skarratt Thomas, London Hospital; Vincent Townrow, Sheffield University and Guy's Hospital; Bertie William Edward Trevor-Roper, Manchester University; Reginald Martin Vick, B.A. Cantab., Cambridge University and St. Bartholomew's Hospital; Philip Seston Vickerman

M.B., Ch.B. Edinburgh, Edinburgh University; Josiah Walker, B.A. Cantab., Cambridge University and Guy's Hospital; Harold Eustace McMahon Wall, St. Mary's Hospital; George Henry Hitchcock Waylen, B.A. Cantab., Cambridge University and St. Bartholomew's Hospital; Arthur Leonard Weakley, St. Bartholomew's Hospital; Walter Weir, St. Thomas's Hospital; Ambrose Cyril Wilson, St. Bartholomew's Hospital; Ernest William Witney, St. Thomas's Hospital; Charles Albert Wood, Guy's Hospital; Wilfrid Burton Wood, B.A. Cantab., Cambridge University and St. Bartholomew's Hospital; and Albert Edward Mortimer Woolf, B.A. Cantab., Cambridge University and London Hospital.

* M.R.C.S. diploma granted on Oct. 15th last.

† M.R.C.S. diploma granted under regulations previous to 1884.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—At the Primary Examination in Anatomy and Physiology for the Diploma of Fellow, held on Nov. 5th, 6th, 10th, 11th, and 12th, 97 candidates presented themselves, of whom 38 per cent. passed and 62 per cent. were rejected. The following are the names of the successful candidates:—

William Bradshaw Ainger, L.R.C.P., M.R.C.S., St. Bartholomew's Hospital; Henry Graeme Anderson, M.B., Ch.B. Glasg., Glasgow University and King's College Hospital; John Bruce Baird, B.Sc., Otago and Glasgow Universities; Dinsha Darasha Baria, L.M. & S. Bombay, L.R.C.P., M.R.C.S., Bombay University and King's College; Phiroz Byramji Bharucha, L.M. & S. Bombay, Bombay and King's College; Aleck William Bourne, B.A. Cantab., Cambridge University and St. Mary's Hospital; Frank Cook, Guy's Hospital; Ellis Patrick Crozier, Ceylon Medical College and London Hospital; Kenneth James Acton Davis, B.A. Cantab., Cambridge University and King's College; William Square Edmond, L.R.C.P., M.R.C.S., St. Bartholomew's Hospital; Hugh Arthur Evans, King's College and Westminster Hospital; Rupert Farrant, L.R.C.P., M.R.C.S., Westminster Hospital and King's College; Edward Cecil Foster, L.R.C.P., M.R.C.S., University College Hospital; Arthur Duncan Gardiner, B.A. Oxon., Oxford University and St. Thomas's Hospital; Harold Delf Gillies, B.A. Cantab., L.R.C.P., M.R.C.S., Cambridge University and St. Bartholomew's Hospital; Richard Henry Cyril Gompertz, M.B., B.S. Lond., L.R.C.P., M.R.C.S., King's College Hospital; Harold Kinder Griffith, B.A. Cantab., Cambridge University and St. Bartholomew's Hospital; David Colvin Henry, M.B., Ch.B. Edin., Edinburgh University and St. Bartholomew's Hospital; Charles Henry James, Major I.M.S., L.R.C.P., M.R.C.S., St. Thomas's and King's College Hospitals; Rupert Llewellyn Jones, London Hospital; Harold Albert Kisch, M.B., B.S. Lond., L.R.C.P., M.R.C.S., St. Thomas's Hospital; William Hugh Leonard, Captain I.M.S., L.R.C.P., M.R.C.S., St. Bartholomew's Hospital and King's College; Norman Francis Lock, B.A. Cantab., Cambridge University and St. Thomas's Hospital; Henry Linnington Martyn, King's College; James Menzies, St. Mary's Hospital; Thomas Bernard Mouat, M.B., Ch.B. Edin., Edinburgh University; William Fulton Neil, M.B., Ch.B. New Zealand, L.R.C.P., M.R.C.S., New Zealand University and Middlesex Hospital; Robert Ollerenshaw, M.D., B.Ch. Vict., L.R.C.P., M.R.C.S., Victoria University, Manchester; John Francis O'Malley, L.R.C.P. & S.I., L.M. Dub., King's College and Middlesex Hospitals; Hugh Raymond Guy Poate, M.B., Ch.M. Sydney, L.R.C.P., M.R.C.S., Sydney University, University College, and Middlesex Hospitals; Alfred Henry Richardson, B.A. Cantab., Cambridge University and St. Thomas's Hospital; Richard Alun Rowlands, B.Sc. Wales, London Hospital; Frederic Sanders, London Hospital; Hew William Scott-Wilson, Oxford University; Harry Bertram Walker, London Hospital; Clifford Sidney White, M.D., B.S. Lond., L.R.C.P., M.R.C.S., University College Hospital; and William Stanley Wildman, London Hospital.

At the First Professional Examination for the Licence in Dental Surgery just completed the following gentlemen were approved in the subjects indicated below:—

Mechanical Dentistry and Dental Metallurgy.—Ernest Beddoes, Liverpool University; Sydney Martin Bell, Royal Dental Hospital; Samuel Isaac Blairman, Royal Dental Hospital; Cecil Lucas Donne, National Dental Hospital; William Kelsey Fry, Guy's Hospital; Stanley Maddox Gardner, Royal Dental Hospital; Frederick Simpson Glover, Guy's Hospital; Leslie Price Harris, Guy's Hospital; Laurence Edgar Crespin Harrison, National Dental Hospital; Edward Palmer Hudson, Guy's Hospital; William Edward Jones, Liverpool University; Leslie Gordon Kinnersley, University College, Bristol; John Knowles, Royal Dental Hospital; Harold William Knowling, Liverpool University; Edward Aubrey Clement Knox-Davies, Guy's Hospital; Harris Raphael Lyons, Royal Dental Hospital; Rupert Mallinson, Royal Dental Hospital; Benjamin Henry Masselink, D.M.D. Michigan, Michigan University; Leslie Miller, Royal Dental Hospital; Wilfred Woolfe Miron, National Dental Hospital; Arthur Stanley Morgan, Guy's Hospital; Victor Mayfield Morris, National Dental Hospital; Percy Hills Orton, Guy's Hospital; John Hayward Paget, Royal Dental Hospital; Frederick William Paul, Guy's Hospital; George Evan Henry Holt Phillips, Guy's Hospital; Alfred Graham Poock, B.A. Cantab., Guy's Hospital; William Macqueen Potter, Royal Dental Hospital; Reginald Wood Powell, Guy's Hospital; George Brentnall Pritchard, Guy's Hospital; Wilfrid Aubrey Rowe, Royal Dental Hospital; Charles Frederic Leyson Ruck, Guy's Hospital; Bernard Edward Patrick Sayers, Royal Dental Hospital; Charles Foote Snow, Guy's Hospital; Claud Stacey, National Dental Hospital; Gordon Bower Sutton, Royal Dental Hospital; Robert Douglas Breen Turner, Liverpool University; and Thomas Edwin Wills Royal Dental Hospital.

Mechanical Dentistry.—Robert Dudley Bell, Royal Dental Hospital; Rowland Burnell Campion, Guy's Hospital; Gordon Comyn, Royal Dental Hospital; Charles Repton Faulkner, Birmingham University; Robert Daniel Gregg, Liverpool University; Harold Harrison, Guy's Hospital; Kenneth George Hoby, Guy's Hospital; William Lowe Jackson, Royal Dental Hospital; Henry Kinnear Ovey, Royal Dental Hospital; Ronald Victor Payton, Birmingham University; Archie Ernest Frederick Peaty, Guy's Hospital; Harold Ernest Pow, Royal Dental Hospital; George Henry Rowley, Guy's Hospital; Alfred Edmund Victor Spill, Guy's Hospital; Edward Algernon Weaver, Birmingham University; Charles Eustace Williams, Royal Dental Hospital; William Hector Wotton, Guy's Hospital; Edgar Olyre Yerbury, Guy's Hospital; and Henry Stanley Young, Royal Dental Hospital.

Dental Metallurgy.—Cecil William Bond, L.R.C.P., M.R.C.S., Royal Dental Hospital; Harold Edgar Bower, Royal Dental Hospital; Ralph Chapman, Royal Dental Hospital; George Vivian Dymott, Guy's Hospital; Niel Edgar, Guy's Hospital; John Eric Rhys Evotts, Guy's Hospital; Edwin Llewellyn Zenas Fickling, Royal Dental Hospital; Victor William Russell Forbes, Royal Dental Hospital; Lawrance Richards Haydon, Royal Dental Hospital; Frank James Hayman, University College, Bristol; Frederic Amos Jaques, Guy's Hospital; Arthur Percy Livett Johnson, Guy's Hospital; George Bertrand Lucas, Royal Dental Hospital; Leonard Clive Matthews, Birmingham University; John Dudley Melhuish, University College, Bristol; Owen Colville Morphy, Royal Dental Hospital; Cyril Arthur Pollard, Guy's Hospital; Gordon Evelyn Rowstron, Guy's Hospital; Frank Percival Sturdee, Royal Dental Hospital; John Herbert Wiles, Guy's Hospital; and Frederic Charles Willows, University College, Bristol.

UNIVERSITY OF CAMBRIDGE.—The following degrees were conferred on Nov. 12th:—

M.D.—F. D. Nicholson, King's.
M.B., B.C.—R. L. Gamlen and C. H. T. Ilott, Caius.

The General Board of Studies will shortly proceed to the election of a University lecturer in zoology at an annual stipend of £50. Applications should be made to the Vice-Chancellor before Dec. 2nd.

ROYAL COLLEGE OF SURGEONS IN IRELAND: DENTAL EXAMINATION.—The following candidates having passed the necessary examination have been admitted Licentiates in Dental Surgery:—

A. J. Adkins, M.R.C.S. Eng., G. C. Bull, M.R.C.S. Eng., J. V. M. Byrne, R. G. Fitchie, J. R. Hackett, M.B., B.Ch. R.U.I., H. J. Hedley, A. E. J. Moore, D. McC. Smith, and L. P. Vernon.

The following candidates have passed the primary part of the Dental Examination:—

J. J. Lyons and R. T. Mosbery.

FOREIGN UNIVERSITY INTELLIGENCE.—*Berlin (Kaiser Wilhelm's Military Medical Academy):* Surgeon-General Eduard Pfuhl, Principal of the Laboratory of Chemistry and Hygiene, has resigned.—*Dresden:* Dr. Lindner, of the Dresden-Friedrichstadt Hospital, formerly Principal of the Surgical Department of the Augusta Hospital, Berlin, has been granted the title of Professor by the Grand Duke of Mecklenburg-Strelitz.—*Leipsic:* Dr. Rolly, *privat-docent* of Medicine, has been granted the title of Extraordinary Professor.—*Rostock:* Dr. Ernst Franke has been recognised as *privat-docent* of Surgery.—*Strasburg:* Dr. Rosenfeld, *privat-docent* of Psychiatry, has been granted the title of Professor.—*Utrecht:* Dr. Steensma has been appointed Lecturer on Chemical Diagnosis.—*Würzburg:* Two new Extraordinary Professorships have been established: one of Laryngology to which Dr. Seifert has been appointed, the other of Odontology which has been assigned to Dr. Michel.

THE BROMPTON HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST.—The following lectures and demonstrations have been arranged to be delivered throughout the winter session, 1908–09, on Wednesdays, at 4 P.M.:—Nov. 25th, Dr. R. Maguire, Certain Heart Cases; Dec. 2nd, Dr. P. Horton-Smith Hartley, Pneumothorax; Dec. 9th, Dr. Hector Mackenzie, Cases from the Wards; Dec. 16th, Dr. R. A. Young, The Cardio-Vascular System in Cases of Pulmonary Tuberculosis; Jan. 13th, 1909, Mr. Stanley Boyd, Difficult Empyemata; Jan. 20th, Dr. Batty Shaw, Occult Cardiac Hypertrophy; Jan. 27th, Dr. S. H. Habershon, Cases from the Wards; Feb. 3rd, Dr. J. J. Perkins, Bronchiectasis; Feb. 10th, Dr. W. C. Bosanquet, Mediastinal Tumours. The course is free to all qualified medical practitioners and to students of medicine. It was inaugurated on Wednesday last, Nov. 18th, by Sir Richard Douglas Powell, consulting physician to the hospital, who delivered an address on Angina Pectoris.

THE MEDICAL INSPECTION OF SCHOOL CHILDREN.—A final course of lectures and demonstrations on the medical inspection of school children will be given by Dr. James Kerr, the chief medical officer of the Education Department of the London County Council, on Jan. 11th, 12th, 13th, and 14th, 1909. The lectures will be delivered in the rooms of the Society of Medical Officers of Health and the demonstrations will take place in the special schools of the London County Council. The course will also include lectures by Dr.

C. J. Thomas and Dr. A. H. Hogarth of the London County Council Education Department, Dr. H. Meredith Richards, Mr. P. Macleod Yearsley, Mr. C. Edward Wallis, and others. The subjects will comprise general medical inspection of school children, special medical inspection, eyes, ears, teeth, infectious diseases, defective children, school and home, office routine, and the preparation of reports. The course is open to all medical graduates, and those desirous of attending should make early application to Mr. W. A. Lawton at the offices of the Society of Medical Officers of Health, 1, Upper Montague-street, Russell-square, London, W.C., as accommodation is only available for a limited number.

A CASE OF KALA-AZAR IN VIENNA.—Much interest has been shown in a case of kala-azar now under treatment in the Vienna Clinic for Children's Diseases. It is the first case observed there. The patient, a Russian child, nine years of age, presented the following symptoms: extreme emaciation, swelling of the abdomen, and increase of the size of the liver, spleen, and other glands. An exploratory puncture of the spleen was made at the clinic with the idea of searching for the micro-organism of kala-azar, and the diagnosis was confirmed by the cultures obtained. The interest of the case lies also in the fact that in Odessa, whence the child came, several cases have occurred quite recently according to the mother of the boy, whilst formerly kala-azar was unknown there.

WIMBLEDON AND DISTRICT MEDICAL SOCIETY.—The session 1908-09 of this society began last Friday, Nov. 13th, by the delivery of an address by Sir William H. Bennett upon Swellings of the Knee-joint not due to Injury. The following is the list of papers set down for future reading and discussion: On Friday, Dec. 11th, Mr. J. Howell Evans on Swellings and Tumours of the Breast, illustrated with lantern slides and specimens; on Friday, Feb. 12th, 1909, Dr. C. O. Hawthorne on Some Clinical Aspects of Functional Paralyses; on Friday, March 12th, Dr. Edmund Cautley on the Use and Abuse of Proprietary Foods in Infant Feeding; and on Friday, April 18th, Dr. James Galloway on Some of the Commoner Affections of the Skin: their Exact Diagnosis and Treatment.

THE BRIGHTON AND HOVE WOMEN'S HEALTH SOCIETY.—This society is ceasing to exist neither from want of funds nor from any lack of interest on the part of those who have been carrying on the work unostentatiously for the past 13 years. The society is winding itself up because, owing largely to its success, public measures will now replace private effort. The town of Hove has appointed a health visitor and Brighton will follow suit in the near future, so that the work of the society will be carried on by the municipal authorities and there must be no interference with the work of these officers by volunteers not answerable to the ratepayers. A great deal has been done by the society since its inception in 1895. Dr. A. Newsholme, the principal medical officer of the Local Government Board, was the medical officer of health of Brighton at the time, and it was in consequence of one of his reports respecting infantile mortality that a few ladies banded themselves together and instituted a society which they very appropriately named the Brighton and Hove Women's Health Society. Their chief aim has been throughout to combat excessive infantile mortality and their work has been the instruction of classes of women in the elementary laws of health and the sound hygienic care of their children. Young girls have also been taught how to aid their parents both in the home and without, and how to take charge of their younger brothers and sisters. Then, too, where the need has been found the society has lent fireguards for the homes of poor people, and in other ways has lent timely assistance to many a poor home. A local correspondent writes:—"While the steps taken by the municipal authorities are welcomed the loss of such an organisation is to be regretted. The balance of the funds in hand is to be utilised for the benefit of both boroughs under the rules of the society, and its officers will remain existent until the money is exhausted. The extinction of the society and the municipal authorities stepping in point to the advance of public opinion on such important questions as the rearing of children and hygiene in the home." This is undoubtedly true, but it is equally true that voluntary workers may prove more effective in educating women in the laws of health than the municipal health visitors, and it is hard to see why Brighton and Hove cannot arrange to make use of the existing society, the efforts of which might be concurrent with those of the municipalities.

Dr. E. Ott, well known to many English members of the medical profession through his practice at Marienbad, has started a winter practice at Meran, Tyrol.

PRESENTATION TO A MEDICAL PRACTITIONER.—At the distribution of certificates and badges to members of the Great Western employees' branch of the St. John Ambulance Association at Chippenham held on Nov. 8th under the presidency of the mayor, Mr. William Thomas Briscoe, M.D., M.Ch. Dub., was presented with a silver cake-basket in appreciation of his services as honorary lecturer.

ROYAL INSTITUTION.—The eighty-third Christmas course of juvenile lectures, founded at the Royal Institution in 1826 by Michael Faraday, will be delivered this year by Professor William Stirling, M.D., LL.D., D.Sc., his subject being "The Wheel of Life." The course, which is to be fully illustrated, will commence on Tuesday, Dec. 29th, at 3 o'clock, and will be continued on Dec. 31st, 1908, and Jan. 2nd, 5th, 7th, and 9th, 1909.

THE annual dinner of the Royal Free Hospital and School of Medicine for Women will be held at the Hotel Cecil, Strand, W.C., on Wednesday, Dec. 9th, at 6.45 for 7.15 P.M. Miss L. B. Aldrich-Blake, M.D., M.S., will take the chair. There will be a musical conversazione after dinner. Applications for dinner tickets should be sent to the honorary secretaries, Mrs. Florence E. Willey and Mr. George P. Mudge, not later than Saturday, Nov. 28th.

THE GLASGOW UNIVERSITY CLUB, LONDON.—The autumn dinner of the Glasgow University Club, London, will be held at the Trocadéro on Friday, Nov. 27th, at 7.30 P.M., when Professor A. Barr, D.Sc., will take the chair. Dr. C. O. Hawthorne, who has recently resigned the honorary secretaryship of the club, will be the special guest of the club at this dinner. Members desiring to attend should send their names and those of their guests to Mr. W. Craig Henderson, 2, Paper-buildings, Temple, E.C., not later than Tuesday, Nov. 24th.

THE MIDDLESEX HOSPITAL SMOKING CONCERT.—Sir A. Conan Doyle will preside at the eighteenth annual smoking concert arranged by the students of the Middlesex Hospital at the Queen's Hall, on Tuesday, Nov. 24th. The proceeds are given to the Middlesex Hospital cancer ward, so that those who attend the concert (to which ladies are cordially invited) assist a most deserving and necessary charity. Many of the leading artists of the theatrical and music hall stages (by permission of their respective managers) have consented to appear. Tickets may be obtained from the honorary secretaries of the concert at the hospital or at the Queen's Hall.

DONATIONS AND BEQUESTS.—At a recent meeting of the board of managers of the Edinburgh Royal Infirmary it was intimated that the late Mr. Peter K. Easson of Kinnoull Cottage, Perth, had bequeathed a one-third share (estimated to amount to about £5300) of his estate to the infirmary; it is to be known as the "Easson Brothers Bequest."—The late Mr. H. J. Randall of Bridgend (Glamorganshire) has bequeathed £6000 to the Bridgend Cottage Hospital.—In memory of the late Mr. Alfred Boyd of Sandon, Essex, an ex-member of the Canadian Parliament, his widow has given £1000 to St. Bartholomew's Hospital to provide scientific instruments.

CENTRAL MIDWIVES BOARD.—A special meeting of the Central Midwives Board was held at Caxton House, Westminster, on Nov. 12th, Dr. F. H. Champneys being in the chair. A letter from the Clerk of the Privy Council as to the procedure to be adopted in prosecutions under Section 12 of the Midwives Act, 1902, was considered. This section is as follows: "Any person wilfully making or causing to be made any falsification in any matter relating to the Roll of Midwives shall be guilty of a misdemeanour, and shall be liable to be imprisoned with or without hard labour for any term not exceeding twelve months." The Clerk of the Privy Council in his letter said that in reference to the particulars of the case in which a medical practitioner was alleged to have issued a false certificate to a woman, he was directed to state for the

information of the Central Midwives Board that this appeared to be a case in which it was the duty of the Board to bring the facts under the notice of the Public Prosecutor. The Board decided that the facts in the case were to be laid before the Public Prosecutor. Reports made at the request of the Board by various local supervising authorities as to the conduct of certain midwives previously censured or cautioned for offences against the rules were received and were of a generally favourable character. 34 midwives were ordered to be cited to attend a special penal meeting of the Board to be held on Dec. 3rd to answer the charges alleged against them by their respective local supervising authorities.

BRUSSELS MEDICAL GRADUATES' ASSOCIATION.—During the summer a deputation, formed by the honorary secretary, Dr. A. G. Haydon, from this association had an interview with Professor Rommelaere, the rector of the University of Brussels. We are informed that on the representations of the Brussels Medical Graduates' Association the following concessions were promised to candidates for the M.D. degree:—

1. That it should be sufficient for English candidates to produce their certificates of registration instead of their diplomas on presenting themselves for examination at Brussels.
2. That the attention of the Administrative Council of the University should be drawn to the insufficiency of certain Indian and American qualifications which do not entitle their holders to the full privileges of practice in their own country.
3. That the examination for the M.D. degree in February should in future take place in March, this month being more convenient for English candidates.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

The Children Bill.

THE Children Bill passed through its report stage in the House of Lords on Thursday, Nov. 12th, but only slight alterations were made in the text of the measure.

The Housing and Town Planning Bill.

Mr. BURNS, the President of the Local Government Board, on Nov. 17th refused to accede to a request made by a Member of the Standing Committee of the House of Commons charged with the consideration of this Bill to drop the part of it relating to town planning. The motive of the request is a fear that if much longer time is spent upon the measure in committee its chances of becoming law this year will be shattered. Mr. BURNS expressed himself as sanguine of being able to carry the whole Bill, but his optimism is not shared by a number of the Members of the Committee.

Industrial Diseases.

The Departmental Committee on Compensation for Industrial Diseases has made a report on glass-worker's cataract and telegraphist's cramp. The Committee recommends that "cataract in glass-workers" should be added to the first column of the schedule of industrial diseases for which compensation may be claimed, and that "processes in the manufacture of glass involving exposure to the glare of molten glass" be added to the second column, but it is added that compensation should be made payable only in cases where an operation is undergone and for a period not exceeding six months. With regard to telegraphist's cramp, the Committee recommends that the application of Section 8 of the Workmen's Compensation Act, 1906, should be modified where the "workman" suffering from the disease is in the employment of the Postmaster-General by the substitution of the postal medical officer of the district for the certifying surgeon appointed under the Factory and Workshop Act, 1901, as the person by whom, in the first instance, the presence of the disease should be certified.

HOUSE OF COMMONS.

WEDNESDAY, NOV. 11TH.

Lunacy and Marriage.

Captain FABER asked the Secretary of State for the Home Department whether, looking at the increase of lunacy, he could see his way to recommending that a Bill should be brought in to prevent the marriages of those persons who had ever been confined in a lunatic asylum.—Mr. GLADSTONE answered: No, Sir, it would be impossible to prohibit the marriage of all persons who have ever been confined in a lunatic asylum, because in many cases the mental trouble has been of a limited or temporary nature. The recommendations on the subject in the report of the Royal Commission on the Feeble Minded will be considered.

The Medical Department of Trinidad.

Mr. SUMMERBELL asked the Under Secretary of State for the Colonies whether his attention had been called to the administration of the medical department of Trinidad; and, if so, whether he could state it was the intention of the Government to take steps having for their object the reorganisation of that department on lines that would give to Trinidad a health ordinance on more modern lines.—Colonel SEELY said in reply: The Secretary of State has received no official representations on the subject and he is not aware that any scheme of reorganisation is under the consideration of the Colonial Government.

Tuberculosis in the Army.

Mr. SUMMERBELL asked the Prime Minister, in view of the promotion by the Government of the Tuberculosis Prevention (Ireland) Bill, to state whether it was the intention of the Government to adopt the recommendations of the Select Committee as to tuberculosis amongst soldiers, about 350 of whom were discharged every year suffering from this disease, and in regard to whom no provision for treatment was made by the State.—Mr. ASQUITH replied: I can add nothing to the statements already made by my right honourable friend the Secretary of State for War with regard to this matter. As has been stated, the Government is not prepared to adopt the recommendations of the Departmental Committee which inquired into this subject.

Public Health in Ramsey.

Mr. BOULTON asked the President of the Local Government Board whether he had seen the report *re* the prevalence of infectious disease and sanitary conditions existing in the urban district of Ramsey by the consulting medical officer of health; whether he was aware that the report stated that there was no water in the town fit for drinking; that the sewage of the town found its way, illegally, directly into the river; that the sanitary conveniences were insanitary and objectionable; whether he would take steps, for the protection of the inhabitants, to see that the urban district council put into force the powers it possessed under the Public Health Act; and what other steps he proposed to take to secure wholesome water and proper drainage for the town.—Mr. BURNS replied: I have obtained copies of the report made by the consulting medical officer of health to the Huntingdonshire county council on this subject, and I find that the report is generally to the effect mentioned in the question. The county council is in communication with the urban district council with respect to the steps to be taken in consequence of the recommendations made in the report, and the latter body was to hold a special meeting to consider the matter. I have requested that I may be informed of the action which the district council proposes to take with regard to it.

The Tuberculosis Prevention (Ireland) Bill.

Mr. GINNELL asked the Chief Secretary to the Lord Lieutenant of Ireland, seeing that no body of ratepayers had asked for the enactment of the Tuberculosis Prevention (Ireland) Bill, while all classes in Ireland desired the enactment of an adequate Land Bill, and that persisting so late in the session with one might endanger the other, whether he would consider the advisability of dropping the Tuberculosis Bill in favour of the promised Land Bill.—Mr. BIRRELL wrote in reply: I have received many resolutions from local authorities and other representative bodies in favour of the Tuberculosis Prevention Bill. It is not proposed to drop the Bill.

THURSDAY, NOV. 12TH.

The Local Government Board for Scotland.

Mr. WATT asked the Secretary for Scotland whether, in view of the increase to be presently effected in the staffing and *personnel* of the Local Government Board for Scotland, he would undertake that a veterinary surgeon with practical experience in meat inspection would be appointed to that Board in order to unify the standard of meat inspection throughout Scotland.—Mr. SINCLAIR furnished the following written answer: I can only inform my honourable friend that if and when an increase of staff of the Local Government Board is necessary all the representations that have been made will have due consideration.

The Transmission of Anthrax.

Mr. BRIGG asked the Secretary of State for Foreign Affairs whether he would give instructions to the consuls in the ports from which goats' hair, mohair, and low quality of wools were exported to circulate amongst the farmers, dealers, and packers in their respective districts a request that they would use every possible precaution to prevent blood stains and pieces of skin being sent to this country in bales for manufacturing purposes, as according to the recent discovery by Dr. F. W. Eurich of Bradford that the germs of anthrax were traceable to blood stains and not to the ordinary dust arising from the sorting of foreign materials, the fatal cases arising from anthrax might be diminished, and the costly regulations for dealing with ordinary dust might, if thought advisable, be considerably modified.—Sir EDWARD GREY (by written answer) replied: I am advised by the Secretary of State for the Home Department that the issue of such a request as is suggested in the question might possibly prove useful, though too great expectations must not be based upon it, and that, after consultation with the Home Office, steps will be taken to bring the suggestion to the notice of those interested.

Police Ambulances in the Metropolis.

Mr. COOPER asked the Secretary of State for the Home Department what was the total number of police wheeled-litter ambulances in the metropolitan area in each year from 1891 to 1907; and the total number at the present time.—Mr. GLADSTONE furnished the following written answer: The earlier figures cannot readily be given, but it may be assumed that previous to 1903 there was an ambulance at every police station. The total number of police ambulances on Dec. 31st of the undermentioned years was:—1903, 190; 1904, 192; 1905, 198; 1906, 203; 1907, 263; and Oct. 31st, 1908, 278.

MONDAY, NOV. 16TH.

The Medicine Chest of the House of Commons.

Mr. PATRICK O'BRIEN asked the First Commissioner of Works whether he was yet in a position to state what arrangements he had been able to make with a view to secure that the necessary medical and surgical appliances were available, and a medical man to apply them, in case of sudden illness occurring within the premises of the House.—Mr. HARCOURT replied: A large medicine chest replete with every drug and instrument which the ingenuity or necessities of man can require has been generously presented to the House by a well-known firm of manufacturing chemists, who do not desire their name to be mentioned in the matter, but I am glad to take this opportunity of conveying to the anonymous donors the gratitude of those who may subsequently profit by these appliances. The contents of this chest were decided upon after the careful consideration and advice

of specialists in these matters. There are four keys to it, which are held by the inspectors of police in the Lords and Commons, the Sergeant-at-Arms, and a representative of the Office of Works. I have no doubt that if and when the necessity should arise Members will receive in the future, as they have done in the past, the immediate and careful attention of their medical colleagues in this House.

TUESDAY, NOV. 17TH.

The Tuberculosis Prevention (Ireland) Bill.

Captain CRAIG asked the Prime Minister whether it was proposed by the Government to extend the scope of the Tuberculosis Prevention (Ireland) Bill to England and Scotland; and, if not, whether steps would be taken to prevent poor persons suffering from the disease in England and Scotland being sent to Ireland to be a burden on the rates.—Mr. ASQUITH replied: I am not in a position to make any statement as to the extension of the scope of this Bill to England and Scotland. The honourable Member's concluding inquiry opens up a large question with regard to the law of settlement which at present applies to England and Scotland but not to Ireland. My right honourable friend the Chief Secretary has, I am informed, expressed the intention of considering that question in connexion with contemplated legislation for the reform of the Poor-laws next year.

BOOKS, ETC., RECEIVED.

BAILLIÈRE, TINDALL, AND COX, 8, Henrietta-street, Covent Garden, London, W.C.

Physiological Principles in Treatment. By W. Langdon Brown, M.D. Cantab., F.R.C.P., Physician to the Metropolitan Hospital, Medical Registrar and Demonstrator of Physiology, St. Bartholomew's Hospital. Price 5s. net.

Transactions of the Medico-Legal Society. For the Year 1907–1908. Edited by Stanley B. Atkinson, M.A., M.B., Trinity College, Cambridge, of the Inner Temple, Barrister-at-Law, Justice of the Peace for the County of London, Member of the Central Midwives Board; and Digby Cotes-Preedy, M.A., Emmanuel College, Cambridge, of the Inner Temple and Oxford Circuit, Barrister-at-Law. Vol. V. Price not stated.

FISCHER, GUSTAV, Jena.

Lehrbuch der Haut- und Geschlechtskrankheiten. Herausgegeben von Professor Dr. Erhard Riecke, Leipzig. Price M.14.50; geb. M.16.

Handbuch der Biochemie des Menschen und der Tiere. Herausgegeben von Prof. Dr. Phil. et Med. Carl Oppenheimer in Berlin. Siebente Lieferung. Price M.5.

HENRY PHIPPS INSTITUTE, 238, Pine-street, Philadelphia.

Fourth Annual Report of the Henry Phipps Institute for the Study, Treatment, and Prevention of Tuberculosis. February 1, 1906, to February 1, 1907. Edited by Joseph Walsh, A.M., M.D. Price not stated.

KABITZSCH, CURT (A. STUBER'S VERLAG), Würzburg.

Lehrbuch der Histologie und der mikroskopischen Anatomie mit besonderer Berücksichtigung des menschlichen Körpers, einschliesslich der mikroskopischen Technik. Von Dr. Ladislaus Szymonowicz, o.ö. Professor der Histologie und Embryologie an der Universität Lemberg. Zweite Auflage, vollständig umgearbeitet und ergänzt unter Mitarbeit von Dr. Rudolf Krause, a.o. Professor der Anatomie an der Universität Berlin. Preis, brosch. M.15.; in Halbfranz gebunden M.17.

LAURIE, T. WERNER, Clifford's Inn, Fleet-street, London, E.C.

Gardens Past and Present. By K. L. Davidson, author of "The Unheated Greenhouse." Illustrated from Photographs by F. Mason Good. Price 6s. net.

LONGMANS, GREEN, AND CO., 39, Paternoster-row, London; and New York, Bombay, and Calcutta.

Recent Advances in Organic Chemistry. By A. W. Stewart, D.Sc., Lecturer on Stereochemistry in University College, London, Carnegie Research Fellow; formerly 1851 Exhibition Research Scholar and Mackay Smith Scholar in the University of Glasgow. With an Introduction by J. Norman Collie, Ph.D., LL.D., F.R.S., Professor of Organic Chemistry in University College, London. Price 7s. 6d. net.

NEWNES, GEORGE, LIMITED, 3 to 12, Southampton-street, Strand, London, W.C.

Every Mother's Baby Book. A Guide to the Rearing of Infants. By Dr. Andrew Wilson. Price 1s. net.

SWAN SONNENSCHEIN AND CO., London. STILLMAN PUBLISHING CO., 313, Forty-first-street, Brooklyn.

Arcana of Nature. By Hudson Tuttle. With an Introduction by Emmet Densmore, M.D. Price 6s. net.

UNIVERSITY TUTORIAL PRESS, LIMITED, 157, Drury-lane, London, W.C.

Principles and Methods of Physical Education and Hygiene. By W. P. Welpton, B.Sc., Master of Method in the University of Leeds. Price 4s. 6d.

URBAN UND SCHWARZENBERG, Berlin und Wien.

William Osler, Königlicher Professor der Medizin an der Universität Oxford. Lehrbuch der Internen Medizin. Aus dem Englischen übersetzt und für deutsche Verhältnisse ergänzt und bearbeitet von Priv.-Doz. Dr. Edmund Hoke, I. Assistent der Medizinischen Universitatsklinik in Prag. Mit einem Vorwort von Obersanitätsrat und Hofrat Prof. Dr. R. v. Jaksch, Prag. Price M.12.

VIGOT FRÈRES, 23, Place de l'École-de-Médecine, Paris.

Digestion et Nutrition. Aperçus de Médecine Pratique. Par le Dr. E. Monin, Spécialiste pour le Tube Digestif et la Nutrition, Chevalier de la Légion d'Honneur, Officier de l'Instruction Publique. Price Fr. 4.

Appointments.

Successful applicants for Vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

ALABONE, M. ANSLOW, L.R.C.P. & S. Edin., L.F.P.S. Glasg., has been appointed Honorary Consulting Physician for Diseases of the Chest to the London Clerks' Association.

BOND, FRANCIS THOMAS, M.D. Lond., M.R.C.S., F.R.S. Edin., has been reappointed Medical Officer of Health by the Thornbury (Gloucestershire) District Council.

CHITTY, HUBERT, M.B., B.S. Lond., L.R.C.P. Lond., M.R.C.S., has been appointed Senior House Surgeon at the Bristol Royal Infirmary.

DAVIES, JOHN DAVID, M.B., C.M. Glasg., has been appointed District Medical Officer by the Swansea Board of Guardians.

DEAN, GEORGE, M.B., C.M. Aberd., has been appointed to the Chair of Pathology in the University of Aberdeen.

DOUBLEDAY, F. N., L.D.S. Eng., has been appointed Dental Surgeon to Farringdon General Dispensary and Lying-in Charity.

GARDINER, PETER, M.D., C.M. Glasg., D.P.H. Lond., has been appointed Honorary Surgeon to the Camborne (Cornwall) Dispensary.

GOULDEN, HERBERT EDWARD, L.R.C.P. Lond., M.R.C.S., D.P.H. Camb., has been appointed Medical Inspector of Schools by the Devon Education Committee.

LANGMEAD, FREDERICK, M.D. Lond., M.R.C.P. Lond., has been appointed Casualty Physician to St. Mary's Hospital, London, W.

MACNALTY, A. SALUSBURY, M.B., B.Ch. Oxon., has been appointed Resident Medical Officer to the Hospital for Consumption and Diseases of the Chest, Brompton.

PITT, CHARLES WIGHTWICK, M.R.C.S., L.S.A., has been reappointed Medical Officer of Health of Malmesbury (Wiltshire).

ROBERTS, G. A., F.R.C.S. Eng., has been appointed Honorary Surgeon to the Royal Albert Hospital, Devonport.

SHARPE, F. A., M.B., B.S. Lond., D.P.H., has been appointed Assistant Medical Officer of Health of the County Borough of Derby.

STABLES, ALEXANDER, M.B., C.M. Aberd., has been appointed District Medical Officer by the Poole (Dorset) Board of Guardians.

STUART-LOW, WILLIAM, F.R.C.S. Eng., has been appointed Surgeon to the Central London Throat and Ear Hospital.

THOMAS, JOSIAH TELFER, L.R.C.P. Lond., M.R.C.S., has been appointed Honorary Surgeon to the Camborne (Cornwall) Dispensary.

TOSSWILL, LEONARD ROBERT, L.R.C.P. Lond., M.R.C.S., has been appointed Medical Inspector of Schools by the Devon Education Committee.

WOODROFFE, H. D., M.B., B.Ch., B.A.O., has been appointed Clinical Assistant to the Chelsea Hospital for Women.

WYLIE, ANDREW, M.D., C.M. Glasg., has been appointed Surgeon to the Central London Throat and Ear Hospital.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

ALBERT DOCK HOSPITAL, Connaught-road, E.—Senior House Surgeon and Registrar. Salary £100 per annum, with board, residence, and washing. Also House Surgeon. Salary £50 per annum, with board, residence, and washing.

BARNSTAPLE, NORTH DEVON INFIRMARY.—House Surgeon. Salary £100 per annum, with board, residence, and washing.

BELGRAVE HOSPITAL FOR CHILDREN, Clapham-road, S.W.—Assistant Surgeon. Also Assistant Physician.

BLACKBURN AND EAST LANCASHIRE INFIRMARY.—Junior House Surgeon. Salary £80 per annum, with board, washing, &c.

CARDIFF CITY MENTAL HOSPITAL, Whitchurch.—Junior Assistant Medical Officer, unmarried. Salary £150, with quarters and all found.

CHESHIRE, CROSSLEY SANATORIUM, Delamere Forest.—Assistant Medical Officer. Salary £100 per annum, with board, apartments, and laundry.

CITY OF LONDON HOSPITAL FOR DISEASES OF THE CHEST, Victoria Park, E.—House Physician for six months. Salary at rate of £50 per annum, with board, washing, and residence.

COVENTRY AND WARWICKSHIRE HOSPITAL.—Senior House Surgeon. Salary £100 per annum, with rooms, board, washing, and attendance. Also Junior House Surgeon. Salary £30 per annum, with rooms, board, washing, and attendance.

CROYDON GENERAL HOSPITAL.—Senior and Junior House Surgeons. Salaries £105 and £60 per annum respectively, with board, laundry, and residence.

DORSET EDUCATION COMMITTEE.—Principal County School Medical Officer. Salary £300 per annum and £65 per annum for travelling and other expenses. Also Assistant School Medical Officer. Salary £150 per annum and £65 per annum for travelling and other expenses.

DUBLIN, ROYAL HOSPITAL FOR INCURABLES, Donnybrook.—Resident Medical Officer, unmarried. Salary £120 per annum, with board and apartments.

EXMINSTER, DEVON COUNTY ASYLUM.—Second Assistant Medical Officer. Salary £150 per annum, rising to £200, with board, apartments, and laundry.

GLOUCKSTER GENERAL INFIRMARY AND GLOUCESTERSHIRE EYE INSTITUTION.—Senior House Surgeon. Salary £100 per annum, with board, residence, and washing.

HASTINGS EDUCATION COMMITTEE.—School Medical Officer. Salary at rate of £200 per annum.

HÔPITAL FRANÇAIS, 72, Shaftesbury-avenue, W.C.—Resident Medical Officer, unmarried. Salary £70 per annum, with full board.
HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Brompton.—Dental Surgeon.
HOSPITAL FOR SICK CHILDREN, Great Ormond-street, London, W.C.—House Surgeon, unmarried, for six months. Salary £30, with board and residence.
IPSWICH, EAST SUFFOLK AND IPSWICH HOSPITAL.—Senior House Surgeon. Salary £80 per annum.
KING EDWARD VII. HOSPITAL AND DISPENSARY FOR WINDSOR, ETON, AND DISTRICT.—House Surgeon, unmarried. Salary £110 per annum, with residence, board, laundry, and attendance.
KINGSTON-UPON-HULL, CITY AND COUNTY OF.—Public Analyst and Bacteriologist. Salary £350 per annum.
LIVERPOOL STANLEY HOSPITAL.—Third House Surgeon. Salary £60 per annum, with board, residence, and washing.
LONDON COUNTY COUNCIL.—Assistant School Doctors in the Public Health Department. Salary £120 per annum.
LONDON HOSPITAL, Whitechapel, E.—Medical Registrar. Salary £100 per annum.
LOUGHBOROUGH AND DISTRICT GENERAL HOSPITAL AND DISPENSARY.—Resident House Surgeon. Salary £100 per annum, with rooms, attendance, board, and washing.
MANCHESTER, UNIVERSITY OF.—External Examiner in Surgery.
MILROY LECTURES ON STATE MEDICINE AND PUBLIC HEALTH.—Milroy Lecturer for 1910.
NEWARK-ON-TRENT HOSPITAL AND DISPENSARY.—Resident Medical Officer, unmarried. Salary £100 per annum, with board, lodging, and laundry.
NEWCASTLE-ON-TYNE DISPENSARY.—Visiting Medical Assistant. Salary £160 per annum.
NORWICH, JENNY LIND INFIRMARY FOR CHILDREN, Unthank-road.—Resident Medical Officer (female). Salary £50 per annum, with board, apartments, and laundry.
PRINCE OF WALES'S GENERAL HOSPITAL, Tottenham, N.—Honorary Anæsthetist. Also Honorary Medical Registrar.
QUEEN'S HOSPITAL FOR CHILDREN, Hackney-road, Bethnal Green, E.—Assistant Physician.
QUEENSLAND GOVERNMENT.—Inspector of Insane Asylums and Medical Superintendent of Goodna Asylum. Salary, &c., £800 per annum, with quarters, fuel, and light.
SAMARITAN FREE HOSPITAL FOR WOMEN, Marylebone-road, N.W.—Anæsthetist. Salary £20 per annum.
TAUNTON AND SOMERSET HOSPITAL.—House Surgeon. Salary £100 per annum, with board, lodging, and laundry.
THROAT HOSPITAL, Golden-square, W.—Assistant Surgeons.
UNIVERSITY COLLEGE HOSPITAL, Gower-street, W.C. — Surgical Registrar.
WEST LONDON HOSPITAL, Hammersmith-road, W.—House Physician for six months. Board, lodging, and laundry provided.
WEST RIDING OF YORKSHIRE COUNTY COUNCIL.—Medical Inspector of Elementary School Children. Salary £300 per annum and actual expenses.
WILLESDEN URBAN DISTRICT COUNCIL ISOLATION HOSPITAL.—Resident Deputy Medical Superintendent, unmarried. Salary £125 per annum, rising to £200, with board, lodging, and washing.

Births, Marriages, and Deaths.

BIRTHS.

BOURDAS.—On Nov. 14th, at Bedford-hill, Balham, the wife of E. Clarkson Bourdas, M.D., F.R.C.S.E., of a son.
GLANVILLE.—On Nov. 16th, at Guyon House, Heath-street, Hampstead, the wife of W. M. G. Glanville, B.M. Oxon., of a son.
GODWIN.—On Nov. 15th, at 35, Southgate-street, Winchester, the wife of Herbert James Godwin, M.B., F.R.C.S., of a daughter.
LEWIS.—On Nov. 14th, at Weymouth-street, W., the wife of Ernest E. Lewis, M.D., of a son.
REANEY.—On Nov. 14th, at Kidbrook House, Blackheath, the wife of Captain M. Foster Reaney, M.B., D.P.H., I.M.S., of a son.

MARRIAGES.

JAMES—TAPLIN.—On Nov. 14th, at the Parish Church, Wimbledon, John James, M.B. Lond., R.A.M.C., Woolwich, to Mary Stuckey Taplin, eldest daughter of Mr. and Mrs. R. Taplin, of Thorncombe, Wimbledon.

DEATHS.

HENLEY.—On Nov. 14th, at Gloucester, Edward Whishaw Henley, M.R.C.S., Medical Superintendent, Gloucester County Asylums, aged 54 years.
MASON.—On the 12th inst., Sydney Herbert Mason, M.R.C.S., L.R.C.P. Lond., aged 35 years, formerly of 333, Moss-lane East, Manchester, only son of John Mason, The Rowans, Knowle, Warwickshire.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

During the week marked copies of the following newspapers have been received:—*Belfast News Letter, Edinburgh Evening Despatch, Aberdeen Express, Morning Leader, Leeds Post, The Scotsman, Newcastle Journal, Wolverhampton Express, Blackburn Telegraph, Morning Advertiser, Bolton Evening Mail, Glasgow Record, Manchester Guardian, Norwich Press, Hereford Times, Dundee Advertiser, Belfast Telegraph, Manchester Courier, Birmingham Post, Manchester Evening Chronicle, Notts Guardian, Manchester Evening News, Wolverhampton Evening News, &c.*

Notes, Short Comments, and Answers to Correspondents.

ESPERANTO.

To the Editor of THE LANCET.

SIR,—I would like to call the attention of your readers to the advantages of this language to medical men both now and in the future, and to the fact that a universal association of Esperantist medical men has been formed (Tutmonda Esperanta Kuracista Asocio—T.E.K.A.), of which the representatives in England are Dr. Richard Legge, County Asylum, Mickleover, Derby, and Mr. Courtenay J. Fuller, 33, Nightingale-place, Woolwich, and that the official journal of this association is the *Voco de Kuracistoj*, which accepts contributions in Esperanto from medical men all over the world. It is, I hope, hardly necessary for me nowadays to occupy your space by dwelling on the ease with which Esperanto can be learned and the useful part which it will play in medicine. If this is not already known to your readers it soon will be. I am, Sir, yours faithfully,

SYDNEY WHITAKER,
Liverpool, Nov. 13th, 1908. Vice-President of the T.E.K.A.

SAILORS' HOSPITAL, VENICE

Mr. de Zuccato, the British consul, in his annual report makes reference to the Cosmopolitan Hospital for Sailors which, through the generous efforts of Lady Layard, has been opened in Venice. Her Majesty Queen Alexandra and Her Majesty Queen Margherita have been graciously pleased to consent to become patronesses. H.R.H. the Princess Christian of Schleswig-Holstein is the president. The number of sailors sent to the hospital having increased the committee has considered it advisable to have two new wards built with 12 beds for men. A special ward for infectious diseases has also been added. Masters and sailors have all expressed their warm appreciation both of the treatment and of the kind attention shown by the nurses, under the superintendence of Miss Chaffey, the lady superior, who has been awarded two medals for honourable service rendered by her in South Africa. Funds for the sailors' wards would be gratefully received by Lady Layard, Palazzo Capello, San Polo, Venice.

FLIES.

To the Editor of THE LANCET.

SIR,—Dr. Delamarre of Paris (*Presse Médicale*, No. 66, Nov. 7th, 1908) has lately recommended placing dishes with a 10 per cent. formaldehyde solution about places infested with flies (or mosquitoes). This procedure completely did away with the fly nuisance in large hospital wards, thousands of these creatures being found floating dead on the solution. I am, Sir, yours faithfully,
Zürich, Nov. 10th, 1908. TH. ZANGGER, M.D.

STERILE EMULSION OF IODOFORM.

IN the *Pharmaceutical Journal* of Oct. 17th directions are given for the preparation of sterile emulsions of iodoform which are now used as intra-articular injections. The suggested formula contains iodoform in fine powder 10 per cent. and liquefied carbolic acid 3 per cent. in a mixture of glycerine and distilled water. Ten parts of iodoform are rubbed to a smooth paste with ten parts of glycerine in a sterilised mortar and mixed with the carbolic acid and 20 parts of water. After the mixture has stood for 12 hours the liquid is poured away and the remaining paste is mixed with sufficient of a mixture of glycerine seven parts and water two parts to produce 100 parts of emulsion. The ingredients should previously be sterilised by suitable methods. Iodoform may be rendered sterile by shaking one part with two parts of a 10 per cent. solution of formaldehyde in water, or it may be left for three days in contact with a 5 per cent. solution of carbolic acid containing in addition one part of mercuric chloride in 2000. The sterilisation of glycerine may be effected by heating it on a sand-bath in a flask for 15 minutes at a temperature of 120° C.

TUBERCULIN.

To the Editor of THE LANCET.

SIR,—In reply to the inquiry of your correspondent in your issue of Nov. 7th as to the most up-to-date information concerning the use and administration of tuberculin, the information he seeks will be found in "Lehrbuch der Spezifischen Diagnostik und Therapie der Tuberkulose," by Bandelier u. Roepke, second edition, Würzburg, Curt Kabitzsch (A. Stuber's Verlag). An English translation of this excellent book is announced in the preface to be on foot.

I am, Sir, yours faithfully,
London, S.W., Nov. 18th, 1908. R. C.

NATIONAL FOOD REFORM ASSOCIATION

THIS association, which came into existence early in the year, is, we are informed, about to begin active operations against an evil described as the use of improper or insufficient food. Undoubtedly questions of diet are of the first importance in health, and anything like an attempt to correct the errors of national diet is a great sociological step forward. We wish the association good fortune in its work but trust that the methods of reform which it describes

will be gradual. There is no subject upon which the crank and faddist are more rampageous than on diet and it would be quite possible for a few obstinate, if honest and noisy, persons to bring the whole association under the critical eye of that very section of the public—viz., the medical and educational professions—whose sympathy it is their object to enlist.

Mr. Edward Gamall.—Our correspondent is very fierce but also very vague. He alleges all forms of avaricious, mercenary, and dishonest conduct but gives no example. He talks of a Court of Appeal to set these matters right but make no attempt to suggest what sort of a court he means. If he means a court composed of leading men of the medical profession how does he reconcile his proposal with his statement that it is the leading men who are disloyal to each other?

Fumeur.—1. No. 2. It is immaterial. 3. Many patent pipes are used by many different people with advantage, but, on the other hand, many smokers derive no harm from neglecting these devices. 4. A smoker is able to find out for himself what tobacco suits him.

Yorkshire Daily Observer.—We have received from a correspondent cuttings from this paper. We cannot base any remarks upon anonymous communications.

COMMUNICATIONS not noticed in our present issue will receive attention in our next.

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 20, Hanover-square, W.

MONDAY.

ODONTOLOGICAL SECTION (Hon. Secretaries—J. Lewin Payne, H. W. Trewby, D. P. Gabell): at 8 P.M.

Paper:
Mr. J. F. Colyer: Notes on the Etiology of Irregularities of the Teeth (illustrated by the epidiascope).

Specimen:
Mr. G. W. Thomson: Dog's Skull showing Result of Alveolar Abscess.

Communication:
Mr. Philip Turner: The Treatment of a Denture impacted in the Œsophagus, by means of Kilian's Œsophageal Tubes.

TUESDAY.

MEDICAL SECTION (Hon. Secretaries—Herbert P. Hawkins, A. M. Gossage): at 5.30 P.M.

Papers:
Dr. Herringham and Dr. Wornack: The Resistance of Arteries to External Pressure. Experiments on the Value of the Sphygmomanometer as a Test of the Blood Pressure.
Dr. C. J. Macalister and Dr. H. C. Ross: On a Stimulant for the Leucocytes of Healthy Persons in the Blood-plasma of Patients suffering from Carcinoma.

HURSDAY.

SPECIAL MEETING OF FELLOWS OF THE SOCIETY: at 5 P.M

Discussion (adjourned from Nov. 18th):
The Influence of Heredity on Disease, with Special Reference to Cancer, Tuberculosis, and Diseases of the Nervous System.

FRIDAY.

SECTION FOR THE STUDY OF DISEASE IN CHILDREN (Hon. Secretaries—Hugh Lett, E. I. Spriggs, Harold J. Stiles): at 5 P.M.

Papers:
Dr. Cecil E. Finny: Duodenal Ulcer with Perforation in a Child Two Months old (with specimen).
Mr. Duncan C. L. Fitzwilliams: A Case of Congenital Scoliosis.

Specimens:
Dr. Edmund Cautley: Congenital Morbus Cordis (two specimens).
Dr. George Carpenter: (1) Congenital Dilatation of the Colon in a Child of Six Months; (2) Septic Meningitis and Cerebral Hæmorrhage in an Infant.

Cases:
Mr. H. M. Rigby: A Case of Ectopia Vesicæ in a Child of Fourteen Months treated by Implantation of the Ureters into the Rectum.
Mr. Sydney Stephenson: A Case of Ptosis Adiposa (Blepharochalasis) in a Child of Seven Years.
Dr. G. A. Sutherland: (1) A Case of Cirrhosis of the Liver; (2) A Case of Muscular Hypotonus.
Dr. George Carpenter: (1) A Case of Pseudohypertrophic Paralysis; (2) Congenital Malformation of the Skull in an Infant associated with other Congenital Malformations.

EPIDEMIOLOGICAL SECTION (Hon. Secretaries—W. H. Hamer, G. S. Buchanan): at 8.30 P.M.

Paper:
Dr. William Butler: The Intermittent Infectiousness of Scarlet Fever.

N.B.—Fellows of the Society are entitled to attend and to speak at all Meetings.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.

MONDAY.—8.30 P.M., Mr. W. H. Battle: Recurrence after the Operation for Radical Cure of Inguinal Hernia.—Mr. V. W. Low: Report of Two Cases of Hæmorrhage into the Testicle of Doubtful Origin.

MEDICO-LEGAL SOCIETY, 22, Albemarle-street, W.

TUESDAY.—8.15 P.M., Exhibition of Specimens and Narration of Cases. Dr. A. G. Bateman: Unqualified Practice and the Medical Act of 1858.

HUNTERIAN SOCIETY.

WEDNESDAY.—8.30 P.M., Dr. C. Thomson: Demonstration on the Bioscope in Medicine.

HARVEIAN SOCIETY OF LONDON, Stafford Rooms, Titchborne-street, Edgware-road, W.

THURSDAY.—8.30 P.M., Mr. E. M. Corner: The Indications of Suppuration in Appendicitis.—Mr. M. F. Kelly: The Treatment of Urethral Stricture.

CHILD STUDY SOCIETY LONDON, Parkes Museum, Margaret-street, W.

THURSDAY.—8 P.M., Dr. G. E. Pritchard: Physiology of the Child.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

MEDICAL GRADUATES' COLLEGE AND POLYCLINIC, 22, Chenies-street, W.C.

MONDAY.—4 P.M., Dr. W. Fox: Clinique (Skin). 5.15 P.M., Lecture:—Mr. M. Yearsley: Stammering.
TUESDAY.—4 P.M., Dr. W. Carr: Clinique (Medical). 5.15 P.M., Lecture:—Dr. A. P. Luff: The Uses of the Calcium Salts in various Morbid Conditions.
WEDNESDAY.—4 P.M., Mr. J. Cantlie: Clinique (Surgical). 5.15 P.M., Lecture:—Dr. C. Mercier: Some Interesting Mental Conditions (with cases).
THURSDAY.—4 P.M., Sir Jonathan Hutchinson: Clinique (Surgical). 5.15 P.M., Lecture:—Dr. J. J. Perkins: Angina Pectoris—its Diagnosis, Treatment, and Prognosis.
FRIDAY.—4 P.M., Mr. R. Lake: Clinique (Ear).

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

MONDAY.—10 A.M., Mr. Etherington-Smith: Demonstration on Surgical Cases. 12 noon, Dr. Low: Pathological Demonstration. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Dunn: Diseases of the Eyes. 2.30 P.M., Operations. 5 P.M., Lecture:—Dr. Saunders: Clinical (with cases).
TUESDAY.—10 A.M., Dr. Moullin: Gynæcological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Dr. Davis: Diseases of the Throat, Nose, and Ear. 2.30 P.M., Operations. Dr. Abraham: Diseases of the Skin. 5 P.M., Lecture:—Dr. Low: Plague.
WEDNESDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Davis: Diseases of the Throat, Nose, and Ear. 12.15 P.M., Lecture:—Dr. Pritchard: Practical Medicine. 2 P.M., Medical and Surgical Clinics. X Rays. 2.30 P.M., Operations. Dr. Robinson: Diseases of Women. 5 P.M., Lecture:—Dr. Beddard: Practical Medicine.
THURSDAY.—10 A.M., Mr. Etherington-Smith: Demonstration on Surgical Cases. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Dunn: Diseases of the Eyes. 2.30 P.M., Operations. 5 P.M., Lecture:—Mr. Baldwin: Practical Surgery.
FRIDAY.—10 A.M., Dr. Moullin: Gynæcological Operations. 12.15 P.M., Lecture:—Dr. Pritchard: Practical Medicine. 2 P.M., Medical and Surgical Clinics. X Rays. Dr. Davis: Diseases of the Throat, Nose, and Ear. 2.30 P.M., Operations. Dr. Abraham: Diseases of the Skin. 5 P.M., Lecture:—Dr. Hood: Some Clinical Observations on Heart Disease.
SATURDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Davis: Diseases of the Throat, Nose, and Ear. 2 P.M., Medical and Surgical Clinics. X Rays. 2.30 P.M., Operations. Dr. Robinson: Diseases of Women.

LONDON SCHOOL OF CLINICAL MEDICINE, Dreadnought Hospital, Greenwich.

MONDAY.—2 P.M., Operations. 2.15 P.M., Sir Dyce Duckworth: Medicine. 3.15 P.M., Mr. Turner: Surgery. 4 P.M., Mr. Lawrence: Ear and Throat. Out-patient Demonstrations:—10 A.M., Surgical and Medical. 12 noon, Ear and Throat. 3.15 P.M., Special Lecture:—Mr. Turner: The Late Complications of Appendicitis.
TUESDAY.—2 P.M., Operations. 2.15 P.M., Dr. R. Wells: Medicine. 3.15 P.M., Mr. Carless: Surgery. 4 P.M., Sir M. Morris: Diseases of the Skin. Out-patient Demonstrations:—10 A.M., Surgical and Medical. 12 noon, Skin.
WEDNESDAY.—2 P.M., Operations. 2.15 P.M., Dr. F. Taylor: Medicine. 3.30 P.M., Mr. Cargill: Ophthalmology. Out-patient Demonstrations:—10 A.M., Surgical and Medical. 11 A.M., Eye. 3.30 P.M., Special Lecture:—Mr. Cargill: Syphilitic Eye Affections.
THURSDAY.—2 P.M., Operations. 2.15 P.M., Dr. G. Rankin: Medicine. 3.15 P.M., Sir W. Bennett: Surgery. 4 P.M., Dr. Sale-Barker: Radiography. Out-patient Demonstrations:—10 A.M., Surgical and Medical. 12 noon, Ear and Throat.
FRIDAY.—2 P.M., Operations. 2.15 P.M., Dr. R. Bradford: Medicine. 3.15 P.M., Mr. McGavin: Surgery. Out-patient Demonstrations:—10 A.M., Surgical and Medical. 12 noon, Skin.
SATURDAY.—2 P.M., Operations. Out-patient Demonstrations:—10 A.M., Surgical and Medical. 11 A.M., Eye.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

MONDAY.—Clinics:—10 A.M., Surgical Out-patient (Mr. J. H. Evans). 2.30 P.M., Medical Out-patient (Dr. T. R. Whipham); Nose, Throat, and Ear (Mr. Carson); X Rays. 4.30 P.M., Medical In-patient Clinic (Dr. A. J. Whiting).
TUESDAY.—Clinic: 10 A.M., Medical Out-patient (Dr. A. G. Auld). 2.30 P.M., Operations (Mr. Carson). Clinics:—Surgical (Mr. W. Edmunds); Gynæcological (Dr. A. E. Giles).
WEDNESDAY.—Clinics:—2.30 P.M., Medical Out-patient (Dr. T. R. Whipham); Skin (Dr. G. N. Meachen); Eye (Mr. R. P. Brooks). 4.30 P.M., Dr. S. J. Gilfillan: Demonstration of Cases of Mental Disease at the Colney Hatch Asylum.

THURSDAY.—2.30 P.M., Gynæcological Operations (Dr. Giles). Clinics:—Medical Out-patient (Dr. A. J. Whiting); Surgical (Mr. Carson); X Rays. 3 P.M., Medical In-patient (Dr. G. P. Chappel). 4.30 P.M., Lecture:—Dr. A. J. Whiting: The Peroneal Type of Muscular Atrophy.

FRIDAY.—10 A.M., Clinic:—Surgical Out-patient (Mr. J. H. Evans). 2.30 P.M., Operations (Mr. Edmunds). Clinics:—Medical Out-patient (Dr. A. G. Auld); Eye (Mr. R. P. Brooks). 3 P.M., Medical In-patient (Dr. R. M. Leslie).

ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN, Leicester square, W.C.

THURSDAY.—6 P.M., Chesterfield Lecture:—Acne Vulgaris in its Three Stages: (1) Comedo; (2) Indurata; (3) Necrotica.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-square, Bloomsbury, W.C.

TUESDAY.—3.30 P.M., Mr. Sargent: Surgery of the Nervous System.
FRIDAY.—3.30 P.M., Mr. L. Paton: Optic Neuritis.

HOSPITAL FOR DISEASES OF THE NERVOUS SYSTEM, Welbeck-street, W.

THURSDAY.—5 P.M., Mr. J. Cantlie: Spinal Cord Surgery.

HOSPITAL FOR SICK CHILDREN (UNIVERSITY OF LONDON), Great Ormond-street, W.C.

THURSDAY.—4 P.M., Lecture:—Dr. Colman: A Demonstration of Selected Medical Cases.

OPERATIONS.

METROPOLITAN HOSPITALS.

MONDAY (23rd).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), St. George's (2 P.M.), St. Mary's (2.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), Chelsea (2 P.M.), Samaritan (Gynæcological, by Physicians, 2 P.M.), Soho-square (2 P.M.), City Orthopædic (4 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Royal Free (2 P.M.), Guy's (1.30 P.M.), Children, Gt. Ormond-street (9 A.M.), St. Mark's (2.30 P.M.).

TUESDAY (24th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), West London (2.30 P.M.), University College (2 P.M.), St. George's (1 P.M.), St. Mary's (1 P.M.), St. Mark's (2.30 P.M.), Cancer (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Soho-square (2 P.M.), Chelsea (2 P.M.), Central London Throat and Ear (2 P.M.), Children, Gt. Ormond-street (9 A.M. and 2 P.M., Ophthalmic, 2 P.M.), Tottenham (2.30 P.M.).

WEDNESDAY (25th).—St. Bartholomew's (1.30 P.M.), University College (2 P.M.), Royal Free (2 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. Thomas's (2 P.M.), London (2 P.M.), King's College (2 P.M.), St. George's (Ophthalmic, 1 P.M.), St. Mary's (2 P.M.), National Orthopædic (10 A.M.), St. Peter's (2 P.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Gt. Northern Central (2.30 P.M.), Westminster (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Cancer (2 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Royal Ear (2 P.M.), Royal Orthopædic (3 P.M.), Children, Gt. Ormond-street (9 A.M. and 9.30 A.M., Dental, 2 P.M.), Tottenham (Ophthalmic, 2.30 P.M.), West London (2.30 P.M.).

THURSDAY (26th).—St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), University College (2 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), London (2 P.M.), King's College (2 P.M.), Middlesex (1.30 P.M.), St. Mary's (2.30 P.M.), Soho-square (2 P.M.), North-West London (2 P.M.), Gt. Northern Central (Gynæcological, 2.30 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Royal Orthopædic (9 A.M.), Royal Ear (2 P.M.), Children, Gt. Ormond-street (9 A.M. and 2 P.M.), Tottenham (Gynæcological, 2.30 P.M.), West London (2.30 P.M).

FRIDAY (27th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), King's College (2 P.M.), St. Mary's (2 P.M.), Ophthalmic (10 A.M.), Cancer (2 P.M.), Chelsea (2 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), City Orthopædic (2.30 P.M.), Soho-square (2 P.M.), Central London Throat and Ear (2 P.M.), Children, Gt. Ormond-street (9 A.M., Aural, 2 P.M.), Tottenham (2.30 P.M.), St. Peter's (2 P.M.).

SATURDAY (28th).—Royal Free (9 A.M.), London (2 P.M.), Middlesex (1.30 P.M.), St. Thomas's (2 P.M.), University College (9.15 A.M.), Charing Cross (2 P.M.), St. George's (1 P.M.), St. Mary's (10 A.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Children, Gt. Ormond-street (9 A.M. and 9.30 A.M.), West London (2.30 P.M.).

At the Royal Eye Hospital (2 P.M.), the Royal London Ophthalmic (10 A.M.), the Royal Westminster Ophthalmic (1.30 P.M.), and the Central London Ophthalmic Hospital operations are performed daily.

EDITORIAL NOTICES

IT is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITOR," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention should be given to this notice.

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.

Lectures, original articles, and reports should be written on one side of the paper only, AND WHEN ACCOMPANIED BY BLOCKS IT IS REQUESTED THAT THE NAME OF THE AUTHOR, AND IF POSSIBLE OF THE ARTICLE, SHOULD BE WRITTEN ON THE BLOCKS TO FACILITATE IDENTIFICATION.

Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers—not necessarily for publication.

We cannot prescribe or recommend practitioners.

Local papers containing reports or news paragraphs should be marked and addressed "To the Sub-Editor."

Letters relating to the publication, sale and advertising departments of THE LANCET *should be addressed "To the Manager."*

We cannot undertake to return MSS. not used.

MANAGER'S NOTICES.

TO SUBSCRIBERS.

WILL Subscribers please note that only those subscriptions which are sent direct to the Proprietors of THE LANCET at their Offices, 423, Strand, London, W.C., are dealt with by them? Subscriptions paid to London or to local newsagents (with none of whom have the Proprietors any connexion whatever) do not reach THE LANCET Offices, and consequently inquiries concerning missing copies, &c., should be sent to the Agent to whom the subscription is paid, and *not* to THE LANCET Offices.

Subscribers, by sending their subscriptions direct to THE LANCET Offices, will insure regularity in the despatch of their Journals and an earlier delivery than the majority of Agents are able to effect.

THE COLONIAL AND FOREIGN EDITION (printed on thin paper) is published in time to catch the weekly Friday mails to all parts of the world.

The rates of subscriptions, post free, either from THE LANCET Offices or from Agents, are:—

FOR THE UNITED KINGDOM.		TO THE COLONIES AND ABROAD.	
One Year	£1 12 6	One Year	£1 14 8
Six Months	0 16 3	Six Months	0 17 4
Three Months	0 8 2	Three Months	0 8 8

Subscriptions (which may commence at any time) are payable in advance. Cheques and Post Office Orders (crossed "London and Westminster Bank, Westminster Branch") should be made payable to the Manager, Mr. CHARLES GOOD, THE LANCET Offices, 423, Strand, London, W.C.

TO COLONIAL AND FOREIGN SUBSCRIBERS.

SUBSCRIBERS ABROAD ARE PARTICULARLY REQUESTED TO NOTE THE RATES OF SUBSCRIPTIONS GIVEN ABOVE. It has come to the knowledge of the Manager that in some cases higher rates are being charged, on the plea that the heavy weight of THE LANCET necessitates additional postage above the ordinary rate allowed for in the terms of subscriptions. Any demand for increased rates, on this or on any other ground, should be resisted. The Proprietors of THE LANCET have for many years paid, and continue to pay, the whole of the heavy cost of postage on overweight foreign issues; and Agents are authorised to collect, and generally do so collect, from the Proprietors the cost of such extra postage.

The Manager will be pleased to forward copies direct from the Offices to places abroad at the above rates, whatever be the weight of any of the copies so supplied. Address—THE MANAGER, THE LANCET OFFICES, 423, STRAND, LONDON, ENGLAND.

METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, Nov. 19th, 1908.

Date.	Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Rainfall.	Solar Radio in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks.
Nov. 13	29·91	S.W.	0·04	85	58	52	54	54	Raining
,, 14	29·89	S.W.	0·04	77	54	52	51	53	Overcast
,, 15	30·20	N.E.	...	51	47	45	44	46	Overcast
,, 16	30·22	N.W.	.	50	47	45	45	46	Overcast
,, 17	30·23	W.	0·01	65	47	46	45	46	Cloudy
,, 18	30 33	S.W.	.	61	52	42	42	43	Fine
,, 19	29·81	N.W.	0·20	51	47	43	44	45	Cloudy

Communications, Letters, &c., have been received from—

A.—Monsieur J. Astier, Asnières; Messrs. G. H. Adams and Co., Bournemouth; Annals Publishing Co., Boston, Manager of; Messrs. R. Anderson and Co., Lond.; Mr. Adolphe Abrahams, Lond.; Mr. K. S. Agnihotri, Panhala; Messrs. Allen and Hanburys, Lond.; Mr. R. J. Albery, Lond.

B.—Mr. F. E. Bennett, Margate; Dr. G. B. Buchanan, Glasgow; Messrs. C. Barker and Sons, Lond.; Mr. J. W. Benson, Lond.; Dr. Edgar G. Barnes, Eye; Dr. R. Allan Bennett, Torquay; Messrs. John Bell and Croyden, Lond., Managing Director of; Messrs. Burroughs, Wellcome, and Co., Lond.; Bristol Medico-Chirurgical Society, Hon. Secretary of; Dr. W. Blair Bell, Liverpool; Messrs. Blundell and Rigby, Lond.

C.—Mr. H. M. Cross, Liverpool; Coventry and Warwickshire Hospital, Secretary of; Messrs. A. H. Cox and Co., Brighton; Clark's College, Lond., Secretary of; Miss E. S. Cooke, Lond.; Mr. H. A. Collins, Croydon; Continental Tyre and Rubber Co., Lond.; Cardiff City Mental Hospital, Whitchurch, Clerk to the; Mr. A. Couchman, Lond.; Dr. D. Douglas-Crawford, Liverpool; Cornwall County Council Sanitary Committee, Truro, Chairman of; Cameleon Iron Co., Lond., Director of; County Asylum, Gloucester, Deputy Medical Superintendent of; Mr. Frank Coleman, Lond.; Dr. Robert Carswell, Lond.

D.—Mr. J. F. Dobson, Leeds; Messrs. Dulau and Co., Lond.; Dr. Dubar, Paris; Messrs. Davy, Hill, and Hodgkinson, Lond.; Dorset County Council Education Committee, Dorchester, Secretary of; Mr. E. Darke, Lond.; Dr. R. Doyne, Oxford; Dairy Supply Co., Lond., Managing Director of; Dr. Delefosse, Paris; *Dundee Advertiser*.

F.—Dr. R. Hingston Fox, Lond.; Mr. G. P. Francis, Brecknock; Dr. W. E. St. L. Finny, Kingston-upon-Thames; F. S. M.; Messrs. Fairchild Bros. and Foster, Lond.; Dr. Theodore Fisher, Sidcup; Mr. N. W. Fairles-Humphreys, Montgomery; Dr. P. J. Frever, Lond.; Dr. Duncan C. L. Fitzwilliams, Lond.

G.—Mr. Harold Grimsdale, Lond.; Dr. G.; Sir James Grant, Ottawa; Mr. H. Bellamy Gardner, Lond.; Mr. A. R. Gunn, Ullapool; Mr. H. J. Godwin, Winchester; Gowanda State Homœopathic Hospital, Gowanda, Steward of; Dr. A. Gradenwitz, Berlin; Sir W. R. Gowers, Lond.; Messrs. Giles, Schacht, and Co., Bristol; Gt. Eastern Railway Co., Lond., Continental Traffic Manager of; G. B. Chocolate Co., Lond.

H.—Mr. James Hughes, Denbigh; Dr. A. Haydon, Lond.; Mr. F. S. D. Hogg, Rickmansworth; Hygienic Co., Lond., Manager of; Dr. J. B. Hurry, Reading; Messrs. Huntley and Palmer, Reading; Hospital for Consumption, &c., Lond., Secretary of; Hastings Education Committee, Clerk to the; Hull Corporation, Town Clerk of; Mr. H. C. Hicks, Bristol; Dr. Charles Hall, Dewsbury.

I.—Incorporated Society of Medical Officers of Health, Lond., Secretary of; *Indian Medical Record*, Calcutta, Manager of.

J.—Mr. T. Jenner, Lond.; J. W. L.; Dr. O. Jennings, Paris; Messrs. John F. Jones and Co., Paris; Mr. T. O. Jones, Ruthin.

K.—Dr. Charles Kerr, Dundee; Mr. Curt Kabitzsch, Würzburg; Mr. C. B. Keetley, Lond.; Messrs. Kutnow and Co., Lond.; Dr. Kuhn, Cassel; K. L. S.; Mr. R. Lawford Knaggs, Leeds.; Messrs. R. A. Knight and Co., Lond.; Dr. James Kerr, Lond.; Mr. R. Keith, Lond.

L.—Mr. H. K. Lewis, Lond.; Mr. C. P. Lankester, Guildford; Dr. J. C. Logan, Pittsburg; Loughborough and District General Hospital, Secretary of; Colonel F. J. Lambkin, R.A.M.C., Lond.; Dr. Arthur Latham, Lond.; Mr. J. B. Lamb, Lond.; Leicester Infirmary, Secretary of; Mr. T. Laffan, Cashel.

M.—Dr. C. K. Millard, Leicester; Mr. E. W. Marshall, Manchester; Maltine Manufacturing Co., Lond.; Mr. J. Murray, Lond.; Mr. W. J. Midelton, Bournemouth; M. M. N.; Mr. Rutherford Morison, Newcastle-on-Tyne; Sir Donald MacAlister, Glasgow; Mr. J. H. Morris-Jones, Castellmai; Mr. G. P. Mudge, Lond.; Dr. Robert Muir, Glasgow; Mr. Charles A. Morton, Clifton; Dr. Charles J. Macalister, Liverpool; Manchester Hospital for Consumption, Secretary of; Manchester Clinical Society, Hon. Librarian and Editor of; Dr. F. W. Mott, Lond.

N.—National Food Reform Association, Lond.; Nurses' Co-operation, Lond., Secretary of; Newark-on-Trent Hospital, Secretary of; Mr. H. Needes, Lond.; Mr. J. C. Needes, Lond.

O.—Dr. E. Ott, Meran, Tyrol; Odol Chemical Works, Lond.; Dr. Caroline A. Osborne, Worcester, Massachusetts; Oxford Medical Publications, Lond., Managers of.

P.—Dr. J. J. Perkins, Lond.; Mr. A. C. Parsons, Earlswood; Mr. J. Hogarth Pringle, Glasgow; Mr. Constant Ponder, Cambridge; Messrs. Peacock and Hadley, Lond.

R.—Mr. B. P. Reilly, Plumstead; Registered Nurses' Society, Lond., Secretary of; Messrs. Reynolds and Branson, Leeds; Real Instituto Bacteriologico Camara Pestana, Lisbon, Director of; Royal Hospital for Incurables, Dublin, Registrar of; Royal College of Physicians, Lond., Registrar of; Royal Exchange Assurance, Lond., Secretary of; Royal College of Surgeons in Ireland, Dublin, Registrar of; Royal Meteorological Society, Lond., Assistant Secretary of; Research Defence Society, Lond., President of.

S.—Mr. M. Stewart, Pitlochry; Mr. H. W. Scriven, Lond.; Star Engineering Co., Wolverhampton; Mr. S. Sugden, Norwich; Mr. N. I. Spriggs, Shrewsbury; Sheffield University, Registrar of; Dr. D. Sandler, Constantinople; Spier's Service Advertisement Agency, Lond.; Scholastic, Clerical, &c., Association, Lond.; Society for the State Registration of Trained Nurses, Lond., Hon. Secretary of; South-West London Medical Society, Hon. Secretary of; Mr. J. H. Settle, Bradford; Dr. G. F. Still, Lond.; Mr. F. W. Sears, Lond.; Société de Golf du Touquet, Lond., Secretary of.

T.—Mr. A. H. Tubby, Lond.; Dr. phil. P Thomsen, Dresden; Mr. R. D. Thomas, Welshpool; Lieutenant-Colonel F. Wyville Thomson, I.M.S., Linlithgow; T. F.

U.—Mrs. Uff, Leighton Buzzard; Dr. A. R. Urquhart, Perth; United Services Medical Society, Lond., Joint Hon. Secretary of.

V.—Mr. H. M. Vyall, Lond.; Vancouver Medical Association, British Columbia, Librarian of.

W.—Dr. A. Glover Williams, Lond.; Messrs. Willows, Francis, Butler, and Co., Lond.; Mr. H. L. Watson Wemyss, Edinburgh; West Riding County Council, Wakefield, Clerk to; Willesden Urban District Council, Clerk to the; Dr. F. R. Walters, Farnham; Mr. Evan Williams, Bala; Messrs. Willing, Lond.

Z.—Mr. Rudolf Zinsmeister, Strasbing.

Letters, each with enclosure, are also acknowledged from—

A.—Mr. E. F. Ackery, Lond.; Ashton-under-Lyne Union, Clerk to the; A. F. M.; A. W.; Apothecaries' Hall of Ireland, Dublin, Secretary of.

B.—Mr. J. E. L. Bates, Lond.; Dr. C. W. J. Bell, Worcester; Mr. P. A. Bradshaw-Isherwood, Headcorn; Bolingbroke Hospital, Lond., Hon. Secretary of; Bishopstone House, Bedford, Secretary of; Bristol Royal Infirmary, Secretary of; Major G. Bent, R.A.M.C., Fleet; Dr. J. Barnicot, Hitchin; Mr. F. A. Brodribb, Yattendon; Dr. D. Bone, Cartmel; Dr. T. B. Bolton, Winsford; Dr. H. C. Bastian, Chesham Bois; Bedford County Hospital, Secretary of.

C.—Miss C. Christie, Lond.; Central News, Lond., Manager of; Clarence Lodge, Clapham, Superintendent of; C. A. J.; C. C. S.; Colchester Education Committee, Clerk to the; Mr. F. W. Clarke, Chorlton-cum-Hardy.

D.—Mr. G. H. Dunford, Newport; Messrs. Dowie and Marshall, Lond.; D. B. F.; Devon County Asylum, Exminster, Clerk to the; Mr. J. T. Davenport, Lond.; Dalrymple House, Rickmansworth, Medical Superintendent of; North Devon Infirmary, Barnstaple, Secretary of.

E.—East Suffolk and Ipswich Hospital, Secretary of; E. E. L.; E. W.; "Epsilon," Brixton; E. H. R.; E. B. L.

F.—Surgeon A. F. Fleming, R.N., Devonport; Fareham Rural District Council, Clerk to the; Mr. Percy V. Fry, Sowerby Bridge; F. W.

G.—Gordon Hospital for Fistula, Lond., Secretary of; Grove House Asylum, Church Stretton, Medical Superintendent of; Mr. C. J. Galbraith, Chingford; G. M. L.; G. R. Y.; Dr. W. M. Glanville, Lond.; Mr. E. Gooch, Lond.

H.—Dr. T. C. Hayes, Lond.; Hereford Corporation, Accountant to the; H. S.

J.—Mr. W. Judd, Lond.; J. J. W.; J. V. R. R.; Mr. L. J. Jarvis, Lond.

K.—Dr. Knight, Edinburgh; Mrs. Kayser, Fleet; Kent and Canterbury Hospital, Secretary of.

L.—Mr. W. W. Linney, Croydon; Leeds Hospital for Women and Children, Secretary of; Dr. C. W. L. Luethgen, Northwood; Dr. A. Lewthwaite, Lond.; Messrs. Leman and Sons, Nottingham; Mr. A. Ludgater, Braintree; Leeds University, Registrar of.

M.—Mr. W. E. Miles, Lond.; "Medicus," Great Wakering; Dr. M.; M. J.; Captain R. McCarrison, I.M.S., Lond.; Manchester Northern Hospital for Women, Secretary of; Messrs. J. Menzies and Co., Edinburgh; Dr. D. W. K. Moody, Lond.; Dr. J. M. H. Macleod, Lond.; Monkwearmouth, &c., Hospital, Secretary of; Mr. J. Mason, Knowle; Dr. Mitchell, Lond.; Messrs. C. Mitchell and Co., Lond.; Messrs. J. Menzies and Co., Glasgow.

N.—Dr. P. C. Nandi, Calcutta; Nottingham Children's Hospital, Lady Superintendent of; Newport and Monmouthshire Hospital, Secretary of; Norfolk Education Committee, Norwich, Accountant to the; Northern Medical Association, Glasgow, Secretary of.

O.—Oldham Infirmary, Secretary of.

P.—Dr. J. M. Pardey, Launceston; Peckham House, Lond., Secretary of; P. L.; Mr. J. Pointon, Southport; Papkerchief Syndicate, Lond.

R.—Mr. S. E. Roberts, Lond.; Dr. F. W. Forbes Ross, Lond.; Royal Society of Medicine, Lond., Secretary of; Miss C. Rowden, Oxford; Mr. H. P. Rees, Lond.; R. B.; Rhondda Urban District Council, Accountant to the.

S.—Dr. C. Stiebel, Bradford; Smedley's Hydro Co., Matlock, Managing Director of; Salford Royal Hospital, Secretary of; Rev. J. B. Sidgwick, Ashby Parva; "Surgeon," Torquay; Messrs. G. Street and Co., Lond.; Scottish Poor Law Medical Officers' Association, Glasgow, Treasurer to the; S. T., Leeds; Sunderland Infirmary, Secretary of; Sheffield Royal Hospital, Secretary of; Seltzogene Patent Charges Co., St. Helen's; Stretton House, Church Stretton, Medical Superintendent of; Messrs. Savory and Moore, Lond.

T.—Major R. G. Turner, I.M.S., Jhansi; Mrs. Taylor, Lond.; Mr. J. Thin, Edinburgh; Messrs. Truslove and Hanson, Lond.

V.—Victoria Hospital for Children, Lond., Secretary of; Dr. G. R. Vicars, Wood Dalling.

W.—Mr. W. Walker, Mid Calder; Mr. C. H. Wilson, Ogmore Vale; Dr. G. B. Wood, Sandown; Worcester County and City Asylum, Powick, Clerk to the; Dr. C. Walker, Liverpool; West Suffolk General Hospital, Bury St. Edmunds, Secretary of; Mr. W. F. A. Walker, Dinas Mawddwy; Messrs. Webb and Neilson, Enfield; W. T. H.; Messrs. Wands, Leicester.

X.—X. Y., Prestatyn.

EVERY FRIDAY. **THE LANCET.** PRICE SEVENPENCE.

SUBSCRIPTION, POST FREE.

FOR THE UNITED KINGDOM.		TO THE COLONIES AND ABROAD.	
One Year	£1 12 6	One Year	£1 14 8
Six Months	0 16 3	Six Months	0 17 4
Three Months	0 8 2	Three Months	0 8 8

Subscriptions (which may commence at any time) are payable in advance.

ADVERTISING.

Books and Publications ...	Seven Lines and under	£0 5
Official and General Announcements	Ditto	0 5 0
Trade and Miscellaneous Advertisements and Situations Vacant	Ditto	0 4 6
	Every additional Line	0 0 6

Situations wanted: First 30 words, 2s. 6d.; per additional 8 words, 6d.
Quarter Page, £1 10s. Half a Page, £2 15s. An Entire Page, £5 5s.

Agent for the Advertisement Department in France—J. ASTIER, 31, Rue Bapst, Asnières, Paris.